

## **Attachment F**

### **Region I Short Sheets and CLP Information Sheets**

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For electronic copies of related documents see:

<http://www.epa.gov/superfund/oerr/aoc/>

(Click on CLP Products and Services)

**USEPA  
CONTRACT LABORATORY PROGRAM  
SHORT SHEETS**

### AVAILABLE SHORT SHEETS

<b>TITLE</b>	<b>DOCUMENT DATE OR NUMBER</b>	<b>SHORT SHEET REVISION NUMBER</b>
USEPA Contract Laboratory Program Statement of Work for Organic Analysis Multi-Media, Multi-Concentration	2/88	1.0
USEPA Contract Laboratory Program Statement of Work for Organic Analysis Multi-Media, Multi-Concentration	OLM01.0	1.0
USEPA Contract Laboratory Program Statement of Work for Organic Analysis Multi-Media, Multi-Concentration	OLM01.9	3.0
USEPA Contract Laboratory Program Statement of Work for Organic Analysis Multi-Media, Multi-Concentration	OLM02.1	2.0
USEPA Contract Laboratory Program Statement of Work for Organic Analysis Multi-Media, High-Concentration	9/88	1.0
USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis Multi-Media, Multi-Concentration	7/88	1.0
USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis Multi-Media, Multi-Concentration	ILM01.0	1.0
USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis Multi-Media, Multi-Concentration	ILM02.1	2.0
USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis Multi-Media, Multi-Concentration	ILM03.0	2.0
USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis Multi-Media, High-Concentration	IHC01.2	1.0

**AVAILABLE SHORT SHEETS**

<b>TITLE</b>	<b>DOCUMENT DATE OR NUMBER</b>	<b>SHORT SHEET REVISION NUMBER</b>
USEPA Contract Laboratory Program Statement of Work for Analysis of Polychlorinated Dibenzo-p-Dioxins (PCDD) and Polychlorinated Dibenzofurans (PCDF) Multi-Media, Multi-Concentration	DFLM01.2	3.0
Superfund Analytical Methods for Low Concentration Water for Organics Analysis	10/92	2.0
USEPA Contract Laboratory Program Water Quality Parameters in Multi-Concentration Water (WQP)	6/93	2.0
USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis Multi-Media, Multi-Concentration	ILM04.0	0.0
USEPA Contract Laboratory Program Statement of Work for Organic Analysis Multi-Media, Multi-Concentration	OLM03.2	0.0

## SOW SHORT SHEET GUIDELINES

The following is a description of the categories included in the Statement of Work (SOW) Short Sheets.

- ! **Title:** Name of the document as it appears on the cover page of the document.
- ! **Document Number:** Number of the document as it appears on the cover of the document. Not all SOWs have associated document numbers. A SOW may be referenced by either the document date or the document number, depending on which one is applicable.
- ! **Document Date:** Date the document was initially issued according to the cover page of the document. Not all SOWs have associated document dates. A SOW may be referenced by either the document date or the document number, depending on which one is applicable.
- ! **Effective Dates:** Range of dates for which the Regions can submit samples for analysis under a particular SOW. If contracts have not been awarded yet, then the expected award date is listed.
- ! **Concentration:** Range of sample concentrations for which the SOW is applicable, such as low to medium, high, or > 20 mg/kg.
- ! **Data Turnaround:** Number of days the laboratory has to submit the complete data package after sample receipt.
- ! **Matrices:** Sample matrices for which the SOW is applicable, such as aqueous, soil, sediment, multi-phase, etc.
- ! **Significant Features:** Information about the SOW which distinguishes it from other SOWs. This section highlights critical items such as holding times, concentrations and matrices which may be different.
- ! **Revisions/Modifications:** Revisions from the previous SOW which may significantly affect data useability.
- ! **Recommended Uses:** Explanation of appropriate Superfund activities for which the SOW may be utilized.
- ! **Analytes/CRQLs:** References Attachment I which lists the parameters included in the analysis and their respective CRQLs or CRDLs. The aqueous and soil CRQLs and CRDLs are listed. "Notes" are provided at the bottom of each Attachment to document deviations from the CRQLs and CRDLs listed.

**TITLE:** USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION

<b>DOCUMENT NUMBER:</b>	Not Applicable
<b>DOCUMENT DATE:</b>	February 1988
<b>EFFECTIVE DATES:</b>	January 20, 1989 through September 10, 1991
<b>CONCENTRATION:</b>	Low to Medium
<b>DATA TURNAROUND:</b>	35 Days
<b>MATRICES:</b>	Aqueous/Soil/Sediment*

**SIGNIFICANT FEATURES**

- ! The parameters include volatile, semivolatile, and pesticide/PCB compounds.
- ! Volatiles and semivolatiles are analyzed by GC/MS; pesticides/PCBs are analyzed by GC/ECD.
- ! Major Tentatively Identified Compounds (TICs) are reported for GC/MS analyses.
- ! Second column confirmation by GC/ECD is required for all pesticides/PCBs. Pesticides/PCBs which are identified concentrations above 10 ng/uL are confirmed by GC/MS analysis.

**REVISIONS/MODIFICATIONS**

The 9/88 and 4/89 revisions to the 2/88 SOW do not significantly affect data useability.

**RECOMMENDED USES**

This Routine Analytical Services (RAS) method is recommended for broad spectrum analysis to define the nature of potential site contamination during SSI, LSI, and RI/FS activities. This method is suitable when a thirty five day turn around results is adequate. It is recommended for samples from known or suspected hazardous waste sites where potential contaminants may be present at significant risk levels.

\* Sediment samples with high moisture content should be solicited as RAS + SAS (Special Analytical Service) to achieve the CRQLs.

**ANALYTES/CRQLs**

The parameters included in the analysis and the Contract Required Quantitation Limits (CRQLs) are listed in the following table.

USEPA CONTRACT LABORATORY PROGRAM  
 STATEMENT OF WORK FOR ORGANIC ANALYSIS  
 MULTI-MEDIA, MULTI-CONCENTRATION  
 FEBRUARY, 1988

## TARGET COMPOUND LIST - VOLATILES

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Chloromethane	10	10
Bromomethane	10	10
Vinyl Chloride	10	10
Chloroethane	10	10
Methylene Chloride	5	5
Acetone	10	10
Carbon Disulfide	5	5
1,1-Dichloroethene	5	5
1,1-Dichloroethane	5	5
1,2-Dichloroethene(total)	5	5
Chloroform	5	5
1,2-Dichloroethane	5	5
2-Butanone	10	10
1,1,1-Trichloroethane	5	5
Carbon Tetrachloride	5	5
Vinyl Acetate	10	10
Bromodichloromethane	5	5

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
1,2-Dichloropropane	5	5
cis-1,3-Dichloropropene	5	5
Trichloroethene	5	5
Dibromochloromethane	5	5
1,1,2-Trichloroethane	5	5
Benzene	5	5
trans-1,3-Dichloropropene	5	5
Bromoform	5	5
4-Methyl-2-pentanone	10	10
2-Hexanone	10	10
Tetrachloroethene	5	5
Toluene	5	5
1,1,2,2-Tetrachloroethene	5	5
Chlorobenzene	5	5
Ethyl Benzene	5	5
Styrene	5	5
Total Xylenes	5	5

**NOTE:**

- ! THE SAMPLE-SPECIFIC CRQLs FOR SOIL SAMPLES WILL BE ADJUSTED FOR PERCENT MOISTURE AND WILL BE HIGHER ABOVE.
- ! MEDIUM LEVEL SOIL CRQL = 125 x AQUEOUS CRQL REPORTED IN UG/KG.

USEPA CONTRACT LABORATORY PROGRAM  
 STATEMENT OF WORK FOR ORGANIC ANALYSIS  
 MULTI-MEDIA, MULTI-CONCENTRATION  
 FEBRUARY, 1988

## TARGET COMPOUND LIST - SEMIVOLATILES

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Phenol	10	330
bis(2-Chloroethyl)ether	10	330
2-Chlorophenol	10	330
1,3-Dichlorobenzene	10	330
1,4-Dichlorobenzene	10	330
Benzyl alcohol	10	330
1,2-Dichlorobenzene	10	330
2-Methylphenol	10	330
bis(2-Chloroisopropyl) ether	10	330
4-Methylphenol	10	330
N-Nitroso-di-n-dipropylamine	10	330
Hexachloroethane	10	330
Nitrobenzene	10	330
Isophorone	10	330
2-Nitrophenol	10	330
2,4-Dimethylphenol	10	330
Benzoic acid	50	1600
bis(2-Chloroethoxy) methane	10	330
2,4-Dichlorophenol	10	330
1,2,4-Trichlorobenzene	10	330
Naphthalene	10	330
4-Chloroaniline	10	330
Hexachlorobutadiene	10	330
4-Chloro-3-methylphenol (para-chloro-meta-cresol)	10	330
2-Methylnaphthalene	10	330
Hexachlorocyclopentadiene	10	330
2,4,6-Trichlorophenol	10	330
2,4,5-Trichlorophenol	50	1600
2-Chloronaphthalene	10	330
2-Nitroaniline	50	1600
Dimethylphthalate	10	330
Acenaphthylene	10	330
2,6-Dinitrotoluene	10	330

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
3-Nitroaniline	50	1600
Acenaphthene	10	330
2,4-Dinitrophenol	50	1600
4-Nitrophenol	50	1600
Dibenzofuran	10	330
2,4-Dinitrotoluene	10	330
Diethylphthalate	10	330
4-Chlorophenyl-phenyl ether	10	330
Fluorene	10	330
4-Nitroaniline	50	1600
4,6-Dinitro-2-methylphenol	50	1600
N-nitrosodiphenylamine	10	330
4-Bromophenyl-phenylether	10	330
Hexachlorobenzene	10	330
Pentachlorophenol	50	1600
Phenanthrene	10	330
Anthracene	10	330
Di-n-butylphthalate	10	330
Fluoranthene	10	330
Pyrene	10	330
Butylbenzylphthalate	10	330
3,3'-Dichlorobenzidine	20	660
Benzo(a)anthracene	10	330
Chrysene	10	330
bis(2-Ethylhexyl)phthalate	10	330
Di-n-octylphthalate	10	330
Benzo(b)fluoranthene	10	330
Benzo(k)fluoranthene	10	330
Benzo(a)pyrene	10	330
Indeno(1,2,3-cd)pyrene	10	330
Dibenz(a,h)anthracene	10	330
Benzo(g,h,i)perylene	10	330

## NOTE:

! THE SAMPLE-SPECIFIC CRQLs FOR SOIL SAMPLES WILL BE ADJUSTED FOR PERCENT MOISTURE AND WILL BE HIGHER TH

! MEDIUM LEVEL SOIL CRQL = 1980 x AQUEOUS CRQL REPORTED IN UG/KG.  
 ATTACHMENT I (page 3 of 3)

USEPA CONTRACT LABORATORY PROGRAM  
 STATEMENT OF WORK FOR ORGANIC ANALYSIS  
 MULTI-MEDIA, MULTI-CONCENTRATION  
 FEBRUARY, 1988

TARGET COMPOUND LIST - PESTICIDES/PCBs

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
alpha-BHC	0.05	8.0
beta-BHC	0.05	8.0
delta-BHC	0.05	8.0
gamma-BHC(Lindane)	0.05	8.0
Heptachlor	0.05	8.0
Aldrin	0.05	8.0
Heptachlor epoxide	0.05	8.0
Endosulfan I	0.05	8.0
Dieldrin	0.10	16.0
4,4'-DDE	0.10	16.0
Endrin	0.10	16.0
Endosulfan II	0.10	16.0
4,4'-DDD	0.10	16.0
Endosulfan sulfate	0.10	16.0

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
4,4'-DDT	0.10	16.0
Methoxychlor	0.5	80.0
Endrin ketone	0.10	16.0
alpha-Chlordane	0.5	80.0
gamma-Chlordane	0.5	80.0
Toxaphene	1.0	160.0
Aroclor-1016	0.5	80.0
Aroclor-1221	0.5	80.0
Aroclor-1232	0.5	80.0
Aroclor-1242	0.5	80.0
Aroclor-1248	0.5	80.0
Aroclor-1254	1.0	160.0
Aroclor-1260	1.0	160.0

**NOTE:**

- ! THE SAMPLE-SPECIFIC CRQLs FOR SOIL SAMPLES WILL BE ADJUSTED FOR PERCENT MOISTURE AND WILL BE HIGHER THAN ABOVE.
- ! MEDIUM LEVEL SOIL CRQL = 15 x LOW LEVEL SOIL CRQL REPORTED IN UG/KG.

**TITLE:** USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION

<b>DOCUMENT NUMBER:</b>	OLM01.0
<b>DOCUMENT DATE:</b>	Not Applicable
<b>EFFECTIVE DATES:</b>	September 28, 1990 through February 1994
<b>CONCENTRATION:</b>	Low to Medium
<b>DATA TURNAROUND:</b>	14 Days or 35 Days
<b>MATRICES:</b>	Aqueous/Soil/Sediment *

**SIGNIFICANT FEATURES**

- ! The parameters include volatile, semivolatile, and pesticide/PCB compounds.
- ! Volatiles and semivolatiles are analyzed by GC/MS, pesticides/PCBs are analyzed by GC/ECD.
- ! Major Tentatively Identified Compounds (TICs) are reported for GC/MS analyses.
- ! Second column confirmation by GC/ECD is required for all pesticides/PCBs. Pesticides/PCBs which are identified by GC/EC above 10 ng/uL are confirmed by GC/MS analysis.

**REVISIONS/MODIFICATIONS**

The following is a list of the significant changes from the 2/88 SOW that are incorporated in the OLM01.0 SOW:

- ! Selected volatile CRQLs have been raised; pesticide/PCB low soil CRQLs have been lowered; and selected pesticide/PCB aqu changed.
- ! Target Compound List (TCL) changes include the elimination of vinyl acetate from the volatile TCL; the elimination of benzy acid from the semivolatile TCL; the addition of carbazole to the semivolatile TCL; and the addition of endrin aldehyde to the p semivolatile TCL compound bis(2-chloroisopropyl)ether was renamed 2,2'-oxybis(1-chloropropane).
- ! A new method for analysis of pesticides/PCBs is used. Changes include the use of wide bore capillary columns; new surrogate techniques.
- ! Pesticide/PCB quantitation is performed using both the primary and secondary columns. The lower value is reported by the lal

The only significant change in the OLM01.1 (December, 1990) and OLM01.1.1 (February, 1991) revisions to the OLM01.0 SOW is the lowering of selected semivolatile CRQLs. The significant changes in the OLM01.1 through OLM01.7 revisions to the OLM01.0 SOW are the selected semivolatile CRQLs and options for either a 14 day or 35 day data turnaround.

**RECOMMENDED USES**

This Routine Analytical Services (RAS) method is recommended for broad spectrum analysis to define the nature and extent of contamination during SSI, LSI, and RI/FS activities. This method is suitable when a fourteen day or thirty five day turnaround for RAS is recommended for samples from known or suspected hazardous waste sites where potential contamination may be present at significant levels.

- \* Sediment samples with high moisture content should be solicited as RAS + SAS (Special Analytical Service) in order to achieve the lowest possible detection limits.

**ANALYTES/CRQLs**

The parameters included in the analysis and the Contract Required Quantitation Limits (CRQLs) are listed in Attachment 1.

USEPA CONTRACT LABORATORY PROGRAM  
 STATEMENT OF WORK FOR ORGANIC ANALYSIS  
 MULTI-MEDIA, MULTI-CONCENTRATION  
 OLM01.0

## TARGET COMPOUND LIST - VOLATILES

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Chloromethane	10	10
Bromomethane	10	10
Vinyl Chloride	10	10
Chloroethane	10	10
Methylene Chloride	10*	10*
Acetone	10	10
Carbon Disulfide	10*	10*
1,1-Dichloroethene	10*	10*
1,1-Dichloroethane	10*	10*
1,2-Dichloroethene (total)	10*	10*
Chloroform	10*	10*
1,2-Dichloroethane	10*	10*
2-Butanone	10	10
1,1,1-Trichloroethane	10*	10*
Carbon Tetrachloride	10*	10*
Bromodichloromethane	10*	10*
1,2-Dichloropropane	10*	10*

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
cis-1,3-Dichloropropene	10*	10*
Trichloroethene	10*	10*
Dibromochloromethane	10*	10*
1,1,2-Trichloroethane	10*	10*
Benzene	10*	10*
trans-1,3-Dichloropropene	10*	10*
Bromoform	10*	10*
4-Methyl-2-pentanone	10	10
2-Hexanone	10	10
Tetrachloroethene	10*	10*
Toluene	10*	10*
1,1,2,2-Tetrachloroethene	10*	10*
Chlorobenzene	10*	10*
Ethyl Benzene	10*	10*
Styrene	10*	10*
Xylenes (total)	10*	10*

\* CRQLs previously 5 ug/L and 5 ug/Kg in 2/88 SOW.

**NOTE:**

- ! THE SAMPLE-SPECIFIC CRQLs FOR SOIL SAMPLES WILL BE ADJUSTED FOR PERCENT MOISTURE AND WILL BE HIGHER THAN  
 ! MEDIUM LEVEL SOIL CRQL = 120 x AQUEOUS CRQL REPORTED IN UG/KG.

USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
OLM01.0

## TARGET COMPOUND LIST - SEMIVOLATILES

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Phenol	10	330
bis(2-Chloroethyl)ether	10	330
2-Chlorophenol	10	330
1,3-Dichlorobenzene	10	330
1,4-Dichlorobenzene	10	330
1,2-Dichlorobenzene	10	330
2-Methylphenol	10	330
2,2'-oxybis(1-Chloropropane)	10	330
4-Methylphenol	10	330
N-Nitroso-di-n-dipropylamine	10	330
Hexachloroethane	10	330
Nitrobenzene	10	330
Isophorone	10	330
2-Nitrophenol	10	330
2,4-Dimethylphenol	10	330
bis(2-Chloroethoxy) methane	10	330
2,4-Dichlorophenol	10	330
1,2,4-Trichlorobenzene	10	330
Naphthalene	10	330
4-Chloroaniline	10	330
Hexachlorobutadiene	10	330
4-Chloro-3-methylphenol	10	330
2-Methylnaphthalene	10	330
Hexachlorocyclopentadiene	10	330
2,4,6-Trichlorophenol	10	330
2,4,5-Trichlorophenol	25*	800*
2-Chloronaphthalene	10	330
2-Nitroaniline	25*	800*
Dimethylphthalate	10	330
Acenaphthylene	10	330
2,6-Dinitrotoluene	10	330
3-Nitroaniline	25*	800*

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Acenaphthene	10	330
2,4-Dinitrophenol	25*	800*
4-Nitrophenol	25*	800*
Dibenzofuran	10	330
2,4-Dinitrotoluene	10	330
Diethylphthalate	10	330
4-Chlorophenyl-phenyl ether	10	330
Fluorene	10	330
4-Nitroaniline	25*	800*
4,6-Dinitro-2-methylphenol	25*	800*
N-nitrosodiphenylamine	10	330
4-Bromophenyl-phenylether	10	330
Hexachlorobenzene	10	330
Pentachlorophenol	25*	800*
Phenanthrene	10	330
Anthracene	10	330
Carbazole	10	330
Di-n-butylphthalate	10	330
Fluoranthene	10	330
Pyrene	10	330
Butylbenzylphthalate	10	330
3,3'-Dichlorobenzidine	10**	330**
Benzo(a)anthracene	10	330
Chrysene	10	330
bis(2-Ethylhexyl)phthalate	10	330
Di-n-octylphthalate	10	330
Benzo(b)fluoranthene	10	330
Benzo(k)fluoranthene	10	330
Benzo(a)pyrene	10	330
Indeno(1,2,3-cd)pyrene	10	330
Dibenz(a,h)anthracene	10	330
Benzo(g,h,i)perylene	10	330

\* CRQLs previously 50 ug/L and 1600 ug/Kg in 2/88 SOW \*\* CRQLs previously 20 ug/L and 660 ug/Kg in 2/88 SOW.

**NOTE:**

! THE SAMPLE-SPECIFIC CRQLs FOR SOIL SAMPLES WILL BE ADJUSTED FOR PERCENT MOISTURE AND WILL BE HIGHER THAN THOSE LISTED ABOVE.

USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
OLM01.0

TARGET COMPOUND LIST - PESTICIDES/PCBs

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil** CRQL (ug/Kg,ppb)
alpha-BHC	0.05	1.7
beta-BHC	0.05	1.7
delta-BHC	0.05	1.7
gamma-BHC (Lindane)	0.05	1.7
Heptachlor	0.05	1.7
Aldrin	0.05	1.7
Heptachlor epoxide	0.05	1.7
Endosulfan I	0.05	1.7
Dieldrin	0.10	3.3
4,4'-DDE	0.10	3.3
Endrin	0.10	3.3
Endosulfan II	0.10	3.3
4,4'-DDD	0.10	3.3
Endosulfan sulfate	0.10	3.3

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil** CRQL (ug/Kg,ppb)
4,4'-DDT	0.10	3.3
Methoxychlor	0.5	17.0
Endrin ketone	0.10	3.3
Endrin aldehyde	0.10	3.3
alpha-Chlordane	0.05*	1.7
gamma-Chlordane	0.05*	1.7
Toxaphene	5.0*	170.0
Aroclor-1016	1.0*	33.0
Aroclor-1221	2.0*	67.0
Aroclor-1232	1.0*	33.0
Aroclor-1242	1.0*	33.0
Aroclor-1248	1.0*	33.0
Aroclor-1254	1.0	33.0
Aroclor-1260	1.0	33.0

Aqueous CRQLs changed from 2/88 SOW to the following:

- \* Aqueous CRQLs (ug/L) - alpha- and gamma- Chlordane from 0.5 to 0.05;  
Toxaphene from 1.0 to 5.0;  
Aroclors-1016, 1232, 1242, and 1248 from 0.5 to 1.0;  
Aroclor-1221 from 0.5 to 2.0.

All low soil CRQLs changed from 2/88 SOW to the following:

- \*\* Low Soil CRQLs (ug/Kg) -alpha-BHC through Endosulfan I from 8.0 to 1.7;  
Dieldrin through 4,4'-DDT and Endrin ketone from 16.0 to 3.3;  
Methoxychlor from 80.0 to 17.0;  
alpha- and gamma-Chlordane from 80.0 to 1.7;  
Toxaphene from 160.0 to 170.0;  
Aroclor-1016, 1232, 1242, and 1248 from 80.0 to 33.0;  
Aroclor-1221 from 80.0 to 67.0;  
Aroclor-1254 and 1260 from 160.0 to 33.0.

NOTE:

! THE SAMPLE-SPECIFIC CRQLs FOR SOIL SAMPLES WILL BE ADJUSTED FOR PERCENT MOISTURE AND WILL BE HIGHER ABOVE.

**TITLE:** USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION

<b>DOCUMENT NUMBER:</b> OLM01.9
<b>DOCUMENT DATE:</b> Not Applicable
<b>EFFECTIVE DATES:</b> July 1993 through February 1995
<b>CONCENTRATION:</b> Low to Medium
<b>DATA TURNAROUND:</b> 14 Days or 35 Days
<b>MATRICES:</b> Aqueous/Soil/Sediment*

### **SIGNIFICANT FEATURES**

- ! The parameters include volatile, semivolatile, and pesticide/PCB compounds.
- ! Volatiles and semivolatiles are analyzed by GC/MS, pesticides/PCBs are analyzed by GC/ECD.
- ! Major Tentatively Identified Compounds (TICs) are reported for GC/MS analyses.
- ! Second column confirmation by GC/ECD is required for all pesticides/PCBs. The lower of the two concentrations detected on both columns is reported. Pesticides/PCBs which are detected at concentrations above 10 ng/uL are confirmed by GC/M

### **REVISIONS/MODIFICATIONS**

The only significant revisions to the OLM01.0 SOW in the OLM01.8 revision were changes in the format and content of the Agency Standard diskette deliverable.

The following is a list of the significant changes from the OLM01.8 revision that are incorporated in the OLM01.9 rev

- ! MS/MSD analysis is not required for SDGs containing only equipment/trip blanks or PE samples.
- ! Specific instructions are given regarding resolution of problems with reduced sample volume and MS/MSD sample

### **RECOMMENDED USES**

This Contract Laboratory Program (CLP) method is recommended for broad spectrum analysis to define the nature and extent of potential site contamination during Site Investigation (SI) and Remedial Investigation/Feasibility Study (RI/FS) activities and to verify that Remedial Design/Remedial Action (RD/RA) activities comply with pre-determined clean-up standards. This method is suitable when a 14 day or 35 day turnaround for results is adequate. It is recommended for samples from known or suspected hazardous waste sites where potential contamination may be present at significant risk levels.

\* This method is not applicable to sediment samples with high moisture content.

### **ANALYTES/CRQLs**

The parameters included in the analysis and the Contract Required Quantitation Limits (CRQLs) are listed in Attac

USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
OLM01.9

## TARGET COMPOUND LIST - VOLATILES

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Chloromethane	10	10
Bromomethane	10	10
Vinyl chloride	10	10
Chloroethane	10	10
Methylene chloride	10	10
Acetone	10	10
Carbon disulfide	10	10
1,1-Dichloroethene	10	10
1,1-Dichloroethane	10	10
1,2-Dichloroethene (total)	10	10
Chloroform	10	10
1,2-Dichloroethane	10	10
2-Butanone	10	10
1,1,1-Trichloroethane	10	10
Carbon tetrachloride	10	10
Bromodichloromethane	10	10
1,2-Dichloropropane	10	10

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
cis-1,3-Dichloropropene	10	10
Trichloroethene	10	10
Dibromochloromethane	10	10
1,1,2-Trichloroethane	10	10
Benzene	10	10
trans-1,3-Dichloropropene	10	10
Bromoform	10	10
4-Methyl-2-pentanone	10	10
2-Hexanone	10	10
Tetrachloroethene	10	10
1,1,2,2-Tetrachloroethane	10	10
Toluene	10	10
Chlorobenzene	10	10
Ethylbenzene	10	10
Styrene	10	10
Xylenes (Total)	10	10

**NOTE:**

- ! The sample-specific CRQLs for soil samples will be adjusted for percent moisture and will be higher than those listed above.
- ! Medium level soil CRQL = 120 x aqueous CRQL reported in ug/kg.

USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
OLM01.9

## TARGET COMPOUND LIST - SEMIVOLATILES

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Phenol	10	330
bis(2-chloroethyl)ether	10	330
2-Chlorophenol	10	330
1,3-Dichlorobenzene	10	330
1,4-Dichlorobenzene	10	330
1,2-Dichlorobenzene	10	330
2-Methylphenol	10	330
2,2'-oxybis(1-chloropropane)	10	330
4-Methylphenol	10	330
N-Nitroso-di-n-propylamine	10	330
Hexachloroethane	10	330
Nitrobenzene	10	330
Isophorone	10	330
2-Nitrophenol	10	330
2,4-Dimethylphenol	10	330
bis-(2-Chloroethoxy)methane	10	330
2,4-Dichlorophenol	10	330
1,2,4-Trichlorobenzene	10	330
Naphthalene	10	330
4-Chloroaniline	10	330
Hexachlorobutadiene	10	330
4-Chloro-3-methylphenol	10	330
2-Methylnaphthalene	10	330
Hexachlorocyclopentadiene	10	330
2,4,6-Trichlorophenol	10	330
2,4,5-Trichlorophenol	25	800
2-Chloronaphthalene	10	330
2-Nitroaniline	25	800
Dimethylphthalate	10	330
Acenaphthylene	10	330
2,6-Dinitrotoluene	10	330
3-Nitroaniline	25	800

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Acenaphthene	10	330
2,4-Dinitrophenol	25	800
4-Nitrophenol	25	800
Dibenzofuran	10	330
2,4-Dinitrotoluene	10	330
Diethylphthalate	10	330
4-Chlorophenyl-phenylether	10	330
Fluorene	10	330
4-Nitroaniline	25	800
4,6-Dinitro-2-methylphenol	25	800
N-Nitrosodiphenylamine	10	330
4-Bromophenyl-phenylether	10	330
Hexachlorobenzene	10	330
Pentachlorophenol	25	800
Phenanthrene	10	330
Anthracene	10	330
Carbazole	10	330
Di-n-butylphthalate	10	330
Fluoranthene	10	330
Pyrene	10	330
Butylbenzylphthalate	10	330
3,3'-Dichlorobenzidine	10	330
Benzo(a)anthracene	10	330
Chrysene	10	330
bis(2-ethylhexyl)phthalate	10	330
Di-n-octylphthalate	10	330
Benzo(b)fluoranthene	10	330
Benzo(k)fluoranthene	10	330
Benzo(a)pyrene	10	330
Indeno(1,2,3-cd)pyrene	10	330
Dibenzo(a,h)anthracene	10	330
Benzo(g,h,i)perylene	10	330

**NOTE:**

- ! The sample-specific CRQLs for soil samples will be adjusted for percent moisture and will be higher than those listed above.
- ! Medium level soil CRQL = 1000 x aqueous CRQL in ug/Kg.

USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
OLM01.9

TARGET COMPOUND LIST - PESTICIDE/PCB

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
alpha-BHC	0.05	1.7
beta-BHC	0.05	1.7
delta-BHC	0.05	1.7
gamma-BHC(Lindane)	0.05	1.7
Heptachlor	0.05	1.7
Aldrin	0.05	1.7
Heptachlor Epoxide	0.05	1.7
Endosulfan I	0.05	1.7
Dieldrin	0.10	3.3
4,4'-DDE	0.10	3.3
Endrin	0.10	3.3
Endosulfan II	0.10	3.3
4,4'-DDD	0.10	3.3
Endosulfan sulfate	0.10	3.3

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/L,ppb)
4,4'-DDT	0.10	3.3
Methoxychlor	0.5	17.0
Endrin ketone	0.10	3.3
Endrin aldehyde	0.10	3.3
alpha-Chlordane	0.05	1.7
gamma-Chlordane	0.05	1.7
Toxaphene	5.0	170.0
Aroclor-1016	1.0	33.0
Aroclor-1221	2.0	67.0
Aroclor-1232	1.0	33.0
Aroclor-1242	1.0	33.0
Aroclor-1248	1.0	33.0
Aroclor-1254	1.0	33.0
Aroclor-1260	1.0	33.0

**NOTE:**

! The sample-specific CRQLs for soil samples will be adjusted for percent moisture and will be higher than those listed above.

**TITLE:** USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION

<b>DOCUMENT NUMBER:</b>	OLM02.1
<b>DOCUMENT DATE:</b>	Not Applicable
<b>EFFECTIVE DATES:</b>	No contracts have been awarded
<b>CONCENTRATION:</b>	Low to Medium
<b>DATA TURNAROUND:</b>	14 Days or 35 Days
<b>MATRICES:</b>	Aqueous/Soil/Sediment*

**SIGNIFICANT FEATURES**

- ! The parameters include volatile, semivolatile, and pesticide/PCB compounds.
- ! Volatiles and semivolatiles are analyzed by GC/MS, pesticides/PCBs are analyzed by GC/ECD.
- ! Major Tentatively Identified Compounds (TICs) are reported for GC/MS analyses.
- ! Second column confirmation by GC/ECD is required for all pesticides/PCBs. The lower of the two concentrations detected on both columns is reported. Pesticides/PCBs which are detected at concentrations above 10 ng/uL are confirmed by GC/MS analysis.

**REVISIONS/MODIFICATIONS**

The following is a list of the significant changes from the OLM01.9 SOW that are incorporated in the OLM02.0 SOW (including revision C

- ! For volatiles analysis, if gaseous compounds 1) fail to exhibit narrow symmetrical peak shape, 2) are not separated from the solvent front, or 3) are not resolved greater than 90% from each other; then a subambient oven controller must be used and the initial temperature must be  $\leq 10^{\circ}\text{C}$ .
- ! Background subtraction must be performed utilizing a spectrum obtained no greater than 20 scans prior to the elution of BFB or DFTPP.
- ! The final column temperature must be held for three minutes following the elution of the last BNA target compound.
- ! Samples which contain alkane series in the TICs will be evaluated using the mass chromatograms of m/z 43, 57, and 71 and the alkane series will be reported as one TIC along with a total estimated concentration.
- ! Within 72 hours of detecting a multi-component pesticide/PCB in a field sample, a standard must be analyzed.
- ! The number of TICs for volatiles have been raised from 10 to 30 and for semivolatiles have been raised from 20 to 30.

**RECOMMENDED USES**

This Contract Laboratory Program (CLP) method is recommended for broad spectrum analysis to define the nature and extent of potential site contamination during Site Investigation (SI) and Remedial Investigation/Feasibility Study (RI/FS) activities and to verify that Remedial Design/Remedial Action (RD/RA) activities comply with the pre-determined clean-up standards. This method is suitable when a 14-day or 35 day turnaround for results is adequate. It is recommended for samples from known or suspected hazardous waste sites where potential contamination may be present at significant risk levels.

- \* This method is not applicable to sediment samples with high moisture content.

**ANALYTES/CRQLs**

The parameters included in the analysis and the Contract Required Quantitation Limits (CRQLs) are listed in Attachment 1.

USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
OLM02.1

## TARGET COMPOUND LIST - VOLATILES

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Chloromethane	10	10
Bromomethane	10	10
Vinyl chloride	10	10
Chloroethane	10	10
Methylene chloride	10	10
Acetone	10	10
Carbon disulfide	10	10
1,1-Dichloroethene	10	10
1,1-Dichloroethane	10	10
1,2-Dichloroethene (total)	10	10
Chloroform	10	10
1,2-Dichloroethane	10	10
2-Butanone	10	10
1,1,1-Trichloroethane	10	10
Carbon tetrachloride	10	10
Bromodichloromethane	10	10
1,2-Dichloropropane	10	10

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
cis-1,3-Dichloropropene	10	10
Trichloroethene	10	10
Dibromochloromethane	10	10
1,1,2-Trichloroethane	10	10
Benzene	10	10
trans-1,3-Dichloropropene	10	10
Bromoform	10	10
4-Methyl-2-pentanone	10	10
2-Hexanone	10	10
Tetrachloroethene	10	10
1,1,2,2-Tetrachloroethane	10	10
Toluene	10	10
Chlorobenzene	10	10
Ethylbenzene	10	10
Styrene	10	10
Xylenes (Total)	10	10

**NOTE:**

! The sample-specific CRQLs for soil samples will be adjusted for percent moisture and will be higher than those listed above.

! Medium level soil CRQL = 120 x aqueous CRQL reported in ug/kg.

USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
OLM02.1

## TARGET COMPOUND LIST - SEMIVOLATILES

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Phenol	10	330
bis(2-chloroethyl)ether	10	330
2-Chlorophenol	10	330
1,3-Dichlorobenzene	10	330
1,4-Dichlorobenzene	10	330
1,2-Dichlorobenzene	10	330
2-Methylphenol	10	330
2,2'-oxybis(1-chloropropane)	10	330
4-Methylphenol	10	330
N-Nitroso-di-n-propylamine	10	330
Hexachloroethane	10	330
Nitrobenzene	10	330
Isophorone	10	330
2-Nitrophenol	10	330
2,4-Dimethylphenol	10	330
bis-(2-Chloroethoxy)methane	10	330
2,4-Dichlorophenol	10	330
1,2,4-Trichlorobenzene	10	330
Naphthalene	10	330
4-Chloroaniline	10	330
Hexachlorobutadiene	10	330
4-Chloro-3-methylphenol	10	330
2-Methylnaphthalene	10	330
Hexachlorocyclopentadiene	10	330
2,4,6-Trichlorophenol	10	330
2,4,5-Trichlorophenol	25	800
2-Chloronaphthalene	10	330
2-Nitroaniline	25	800
Dimethylphthalate	10	330
Acenaphthylene	10	330
2,6-Dinitrotoluene	10	330
3-Nitroaniline	25	800

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
Acenaphthene	10	330
2,4-Dinitrophenol	25	800
4-Nitrophenol	25	800
Dibenzofuran	10	330
2,4-Dinitrotoluene	10	330
Diethylphthalate	10	330
4-Chlorophenyl-phenylether	10	330
Fluorene	10	330
4-Nitroaniline	25	800
4,6-Dinitro-2-methylphenol	25	800
N-Nitrosodiphenylamine	10	330
4-Bromophenyl-phenylether	10	330
Hexachlorobenzene	10	330
Pentachlorophenol	25	800
Phenanthrene	10	330
Anthracene	10	330
Carbazole	10	330
Di-n-butylphthalate	10	330
Fluoranthene	10	330
Pyrene	10	330
Butylbenzylphthalate	10	330
3,3'-Dichlorobenzidine	10	330
Benzo(a)anthracene	10	330
Chrysene	10	330
bis(2-ethylhexyl)phthalate	10	330
Di-n-octylphthalate	10	330
Benzo(b)fluoranthene	10	330
Benzo(k)fluoranthene	10	330
Benzo(a)pyrene	10	330
Indeno(1,2,3-cd)pyrene	10	330
Dibenzo(a,h)anthracene	10	330
Benzo(g,h,i)perylene	10	330

**NOTE:**

! The sample-specific CRQLs for soil samples will be adjusted for percent moisture and will be higher than those listed above.

! Medium level soil CRQL = 1000 x aqueous CRQL in ug/Kg.

USEPA CONTRACT LABORATORY PROGRAM  
 STATEMENT OF WORK FOR ORGANIC ANALYSIS  
 MULTI-MEDIA, MULTI-CONCENTRATION  
 OLM02.1

TARGET COMPOUND LIST - PESTICIDE/PCB

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/Kg,ppb)
alpha-BHC	0.05	1.7
beta-BHC	0.05	1.7
delta-BHC	0.05	1.7
gamma-BHC(Lindane)	0.05	1.7
Heptachlor	0.05	1.7
Aldrin	0.05	1.7
Heptachlor Epoxide	0.05	1.7
Endosulfan I	0.05	1.7
Dieldrin	0.10	3.3
4,4'-DDE	0.10	3.3
Endrin	0.10	3.3
Endosulfan II	0.10	3.3
4,4'-DDD	0.10	3.3
Endosulfan sulfate	0.10	3.3

Compound	Aqueous CRQL (ug/L,ppb)	Low Soil CRQL (ug/L,ppb)
4,4'-DDT	0.10	3.3
Methoxychlor	0.5	17.0
Endrin ketone	0.10	3.3
Endrin aldehyde	0.10	3.3
alpha-Chlordane	0.05	1.7
gamma-Chlordane	0.05	1.7
Toxaphene	5.0	170.0
Aroclor-1016	1.0	33.0
Aroclor-1221	2.0	67.0
Aroclor-1232	1.0	33.0
Aroclor-1242	1.0	33.0
Aroclor-1248	1.0	33.0
Aroclor-1254	1.0	33.0
Aroclor-1260	1.0	33.0

**NOTE:**

! The sample-specific CRQLs for soil samples will be adjusted for percent moisture and will be higher than those listed above.

**TITLE:** USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, HIGH CONCENTRATION

<b>DOCUMENT NUMBER:</b>	Not Applicable
<b>DOCUMENT DATE:</b>	September 1988
<b>EFFECTIVE DATES:</b>	June 7, 1989 through December 26, 1991
<b>CONCENTRATION:</b>	High: Greater than 20 ppm
<b>DATA TURNAROUND:</b>	35 Days
<b>MATRICES:</b>	Liquid/Solid/Multi-phase

**SIGNIFICANT FEATURES**

- ! No holding times are designated for high concentration samples.
- ! The analyses are suitable for highly contaminated samples (>20 mg/Kg).
- ! The analyses are acceptable for liquid, solid, or multiphase samples. Multi-phase samples are separated into water miscible liquid, water immiscible liquid, or solid phases. Each phase is analyzed separately.
- ! Volatile, extractable (semivolatiles and pesticides), and multicomponent extractable (Aroclors and Toxaphene) compounds.
- ! Volatiles and extractables are analyzed by GC/MS; Aroclors and Toxaphene are analyzed by GC/ECD.
- ! Second column confirmation by GC/ECD is required for Aroclors and Toxaphene.
- ! Major Tentatively Identified Compounds (TICs) are reported for GC/MS analyses.

**REVISIONS/MODIFICATIONS**

The 1/89 and 4/89 revisions to the 9/88 SOW do not significantly affect data useability.

**RECOMMENDED USES**

This Routine Analytical Services (RAS) method is recommended for pre-remedial, remedial, or removal projects where high concentrations of organic contaminants (greater than 20 mg/Kg) are suspected and a thirty five day turnaround for results is adequate. It is recommended for samples obtained from drummed material, waste pits or lagoons, piles of waste, tanker trucks, onsite tanks, or apparent contaminated soil areas. The waste material may be industrial process waste, byproducts, raw materials, intermediates and contaminated products. Samples may be spent oil, spent solvents, paint wastes, metal treatment wastes, and polymer formulations.

The method is suitable for solids, liquids, or multiphase samples, a phase being either water miscible liquid, water immiscible liquid, or solid. Various methods of phase separation may be utilized depending on the number and types of phases in a sample.

**ANALYTES/CRQLs**

The parameters included in the analysis and the Contract Required Quantitation Limits (CRQLs) are listed in .

## TARGET COMPOUND LIST - VOLATILES

Compound	CRQL (mg/Kg,ppm)
Chloromethane	5.0
Bromomethane	5.0
Vinyl Chloride	5.0
Chloroethane	5.0
Methylene Chloride	2.5
Acetone	5.0
Carbon Disulfide	2.5
1,1-Dichloroethene	2.5
1,1-Dichloroethane	2.5
1,2-Dichloroethene (total)	2.5
Chloroform	2.5
1,2-Dichloroethane	2.5
2-Butanone	5.0
1,1,1-Trichloroethane	2.5
Carbon Tetrachloride	2.5
Vinyl Acetate	5.0
Bromodichloromethane	2.5

Compound	CRQL (mg/Kg,ppm)
1,2-Dichloropropane	2.5
cis-1,3-Dichloropropene	2.5
Trichloroethene	2.5
Dibromochloromethane	2.5
1,1,2-Trichloroethane	2.5
Benzene	2.5
trans-1,3-Dichloropropene	2.5
Bromoform	2.5
4-Methyl-2-pentanone	5.0
2-Hexanone	5.0
Tetrachloroethene	2.5
1,1,2,2-Tetrachloroethane	2.5
Toluene	2.5
Chlorobenzene	2.5
Ethylbenzene	2.5
Styrene	2.5
Xylene (Total)	2.5

**NOTE:**

- ! ALL CRQLs ARE BASED ON WET WEIGHT AND APPLY TO SOLID AND LIQUID SAMPLES.
- ! RESULTS FOR BOTH SOLID AND LIQUID SAMPLES ARE REPORTED AS MG/KG, WET WEIGHT.

USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, HIGH CONCENTRATION  
SEPTEMBER, 1988

## TARGET COMPOUND LIST - EXTRACTABLES

Compound	CRQL (mg/Kg,ppm)
Phenol	20
bis(2-Chloroethyl)ether	20
2-Chlorophenol	20
1,3-Dichlorobenzene	20
1,4-Dichlorobenzene	20
Benzyl alcohol	20
1,2-Dichlorobenzene	20
2-Methylphenol	20
bis(2-Chloroisopropyl) ether	20
4-Methylphenol	20
N-Nitroso-di-n-dipropylamine	20
Hexachloroethane	20
Nitrobenzene	20
Isophorone	20
2-Nitrophenol	20
2,4-Dimethylphenol	20
Benzoic acid	100
bis(2-Chloroethoxy) methane	20
2,4-Dichlorophenol	20
1,2,4-Trichlorobenzene	20
Naphthalene	20
4-Chloroaniline	20
Hexachlorobutadiene	20
4-Chloro-3-methylphenol (para-chloro-meta-cresol)	20
2-Methylnaphthalene	20
Hexachlorocyclopentadiene	20
2,4,6-Trichlorophenol	20
2,4,5-Trichlorophenol	100
2-Chloronaphthalene	20
2-Nitroaniline	100
Dimethylphthalate	20

Compound	CRQL (mg/Kg,ppm)
Acenaphthylene	20
2,6-Dinitrotoluene	20
3-Nitroaniline	100
Acenaphthene	20
2,4-Dinitrophenol	100
4-Nitrophenol	100
Dibenzofuran	20
2,4-Dinitrotoluene	20
Diethylphthalate	20
4-Chlorophenyl-phenylether	20
Fluorene	20
4-Nitroaniline	100
4,6-Dinitro-2-methylphenol	100
N-nitrosodiphenylamine	20
4-Bromophenyl-phenylether	20
alpha-BHC	20
Hexachlorobenzene	20
beta-BHC	20
Pentachlorophenol	100
gamma-BHC (Lindane)	20
Phenanthrene	20
Anthracene	20
delta-BHC	20
Heptachlor	20
Aldrin	20
Di-n-butylphthalate	20
Fluoranthene	20
Heptachlor epoxide	20
Monochlorobiphenyl	100
Dichlorobiphenyl	100
Trichlorobiphenyl	100

## NOTE:

- ! ALL CRQLs ARE BASED ON WET WEIGHT AND APPLY TO SOLID AND LIQUID SAMPLES.
- ! RESULTS FOR BOTH SOLID AND LIQUID SAMPLES ARE REPORTED AS MG/KG, WET WEIGHT.

USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, HIGH CONCENTRATION  
SEPTEMBER, 1988

## TARGET COMPOUND LIST - EXTRACTABLES (CONTINUED)

Compound	CRQL (mg/Kg,ppm)
Tetrachlorobiphenyl	100
Pyrene	20
gamma-Chlordane	20
Endosulfan I	20
alpha-Chlordane	20
4,4'-DDE	20
Dieldrin	20
Hexachlorobiphenyl	100
Pentachlorobiphenyl	100
Endrin	20
Endosulfan II	20
4,4'-DDD	20
Heptachlorobiphenyl	100
Butylbenzylphthalate	20
Endosulfan sulfate	20
4,4'-DDT	20

Compound	CRQL (mg/Kg,ppm)
Endrin ketone	20
Benzo(a)anthracene	20
Methoxychlor	20
Chrysene	20
Octachlorobiphenyl	200
3,3'-Dichlorobenzidine	40
bis(2-Ethylhexyl)phthalate	20
Nonachlorobiphenyl	200
Decachlorobiphenyl	200
Di-n-octylphthalate	20
Benzo(b)fluoranthene	20
Benzo(k)fluoranthene	20
Benzo(a)pyrene	20
Indeno(1,2,3-cd)pyrene	20
Dibenz(a,h)anthracene	20
Benzo(g,h,i)perylene	20

## TARGET COMPOUND LIST - MULTICOMPONENT EXTRACTABLES

Compound	CRQL (mg/Kg,ppm)
Toxaphene	50
Aroclor 1016	10
Aroclor 1221	10
Aroclor 1232	10
Aroclor 1242	10
Aroclor 1248	10
Aroclor 1254	10
Aroclor 1260	10

## NOTE:

- ! ALL CRQLs ARE BASED ON WET WEIGHT AND APPLY TO SOLID AND LIQUID SAMPLES.
- ! RESULTS FOR BOTH SOLID AND LIQUID SAMPLES ARE REPORTED AS MG/KG, WET WEIGHT.

**TITLE:** USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR INORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION

<b>DOCUMENT NUMBER:</b>	Not Applicable
<b>DOCUMENT DATE:</b>	July 1988
<b>EFFECTIVE DATES:</b>	May 23, 1989 through March 29, 1992
<b>CONCENTRATION:</b>	Low to Medium
<b>DATA TURNAROUND:</b>	35 Days
<b>MATRICES:</b>	Aqueous/Soil/Sediment *

**SIGNIFICANT FEATURES**

! The analyses are suitable for aqueous, soil or sediment samples at low to medium concentration levels.

**REVISIONS/MODIFICATIONS**

2/89 - Method for Total Cyanide (CN) Analysis by Midi Distillation Method 335.2 CLP-M was added.

6/89 Revisions to the 7/88 SOW do not significantly affect data useability.

**RECOMMENDED USES**

This Routine Analytical Services (RAS) method is recommended for broad spectrum analysis to define the nature and extent of potential site contamination during SSI, LSI, and RI/FS activities. This method is suitable when a thirty five day turnaround for results is adequate. It is recommended for samples from known or suspected hazardous waste sites where potential contamination may be present at significant risk levels.

\* Sediment samples with high moisture content should be solicited as RAS + SAS (Special Analytical Service) in order to achieve the CRDLs.

**ANALYTES/CRDLs**

The parameters included in the analysis and the Contract Required Detection Limits (CRDLs) are listed in Attachment

ATTACHMENT I (page 1 of 1)

USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR INORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
JULY, 1988

TARGET ANALYTE LIST

Analyte	AQUEOUS CRDL (ug/L,ppb)	SOIL CRDL (mg/Kg,ppm)
Aluminum	200	40
Antimony	60	12
Arsenic	10	2
Barium	200	40
Beryllium	5	1
Cadmium	5	1
Calcium	5000	1000
Chromium	10	2
Cobalt	50	10
Copper	25	5
Iron	100	20
Lead	3	0.6

Analyte	AQUEOUS CRDL (ug/L,ppb)	SOIL CRDL (mg/Kg,ppm)
Magnesium	5000	1000
Manganese	15	3
Mercury	0.2	0.1
Nickel	40	8
Potassium	5000	1000
Selenium	5	1
Silver	10	2
Sodium	5000	1000
Thallium	10	2
Vanadium	50	10
Zinc	20	4
Cyanide	10	2

**NOTE:**

! THE SAMPLE-SPECIFIC CRDLs FOR SOIL SAMPLES WILL BE ADJUSTED FOR PERCENT MOISTURE AND WILL BE HIGHER THAN THOSE LISTED ABOVE.

**TITLE:** USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR INORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION

<b>DOCUMENT NUMBER:</b>	ILM01.0
<b>DOCUMENT DATE:</b>	Not Applicable
<b>EFFECTIVE DATES:</b>	September 7, 1990 through September 26, 1993
<b>CONCENTRATION:</b>	Low to Medium
<b>DATA TURNAROUND:</b>	35 Days
<b>MATRICES:</b>	Aqueous/Soil/Sediment *

**SIGNIFICANT FEATURES**

- ! The analyses are suitable for aqueous, soil or sediment samples at low to medium concentration levels.
- ! This Statement of Work includes the midi distillation for cyanide analysis and the microwave digestion for GFAA and ICP analyses. These two sample preparation procedures require less sample volume than the traditional Statement of Work sample preparation procedures.

**REVISIONS/MODIFICATIONS**

None to Date

**RECOMMENDED USES**

This Routine Analytical Services (RAS) method is recommended for broad spectrum analysis to define the nature and extent of potential site contamination during SSI, LSI, and RI/FS activities. This method is suitable when a thirty five day turnaround for results is adequate. It is recommended for samples from known or suspected hazardous waste sites where potential contamination may be present at significant risk levels.

\* Sediment samples with high moisture content should be solicited as RAS + SAS (Special Analytical Service) in order to achieve the CRDLs.

**ANALYTES/CRDLs**

The parameters included in the analysis and the Contract Required Detection Limits (CRDLs) are listed in Att

ATTACHMENT I (page 1 of 1)

USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR INORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
ILM01.0

TARGET ANALYTE LIST

Analyte	Aqueous CRDL (ug/L,ppb)	Soil CRDL (mg/Kg,ppm)
Aluminum	200	40
Antimony	60	12
Arsenic	10	2
Barium	200	40
Beryllium	5	1
Cadmium	5	1
Calcium	5000	1000
Chromium	10	2
Cobalt	50	10
Copper	25	5
Iron	100	20
Lead	3	0.6

Analyte	Aqueous CRDL (ug/L,ppb)	Soil CRDL (mg/Kg,ppm)
Magnesium	5000	1000
Manganese	15	3
Mercury	0.2	0.1
Nickel	40	8
Potassium	5000	1000
Selenium	5	1
Silver	10	2
Sodium	5000	1000
Thallium	10	2
Vanadium	50	10
Zinc	20	4
Cyanide	10	2

**NOTE:**

! THE SAMPLE-SPECIFIC CRDLs FOR SOIL SAMPLES WILL BE ADJUSTED FOR PERCENT MOISTURE AND WILL BE HIGHER THAN THOSE LISTED ABOVE.

**TITLE: USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR INORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION**

<b>DOCUMENT NUMBER:</b> ILM02.1
<b>DOCUMENT DATE:</b> Not Applicable
<b>EFFECTIVE DATES:</b> March 1993 through October 1994
<b>CONCENTRATION:</b> Low to Medium
<b>DATA TURNAROUND:</b> 14 Days or 35 Days
<b>MATRICES:</b> Aqueous/Soil/Sediment*

**SIGNIFICANT FEATURES**

! The analyses are suitable for aqueous, soil, or sediment samples at low to medium concentration levels.

**REVISIONS/MODIFICATIONS**

The following is a list of the significant changes from the ILM01.0 SOW that are incorporated in the ILM02.1 SOW:

- ! Specific analysis instructions are presented when samples are received for dissolved metals analysis.
- ! Requirements for contract reports/deliverables distribution are included for 14 day turnaround contracts.
- ! SOPs are now required to be distributed by the laboratories to EPA-NEIC.
- ! Microwave digestion for soil/sediment samples is not appropriate for quantitative recovery of antimony.

**RECOMMENDED USES**

This Contract Laboratory Program (CLP) method is recommended for broad spectrum analysis to define the nature and extent of potential site contamination during Site Investigation (SI) and Remedial Investigation/Feasibility Study (RI/FS) activities and to verify that Remedial Design/Remedial Action (RD/RA) activities comply with pre-determined clean-up standards. This method is suitable when a 14 day or 35 day turnaround for results is adequate. It is recommended for samples from known or suspected hazardous waste sites where potential contamination may be present at significant risk levels.

\* This method is not applicable to sediment samples with high moisture content.

**ANALYTES/CRDLs**

The parameters included in the analysis and the Contract Required Detection Limits (CRDLs) are listed in Attachn

ATTACHMENT 1

USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR INORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
ILM02.1

TARGET ANALYTE LIST

Analyte	Aqueous CRDL (ug/L,ppb)	Soil CRDL (mg/Kg,ppm)
Aluminum	200	40
Antimony	60	12
Arsenic	10	2
Barium	200	40
Beryllium	5	1
Cadmium	5	1
Calcium	5000	1000
Chromium	10	2
Cobalt	50	10
Copper	25	5
Iron	100	20
Lead	3	0.6

Analyte	Aqueous CRDL (ug/L,ppb)	Soil CRDL (mg/Kg,ppm)
Magnesium	5000	1000
Manganese	15	3
Mercury	0.2	0.1
Nickel	40	8
Potassium	5000	1000
Selenium	5	1
Silver	10	2
Sodium	5000	1000
Thallium	10	2
Vanadium	50	10
Zinc	20	4
Cyanide	10	2

**NOTE:**

! The sample-specific CRDLs for soil samples will be adjusted for percent moisture and will be higher than those listed a

**TITLE: USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR INORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION**

<b>DOCUMENT NUMBER:</b> ILM03.0
<b>DOCUMENT DATE:</b> Not Applicable
<b>EFFECTIVE DATES:</b> May 1993 through March 1996
<b>CONCENTRATION:</b> Low to Medium
<b>DATA TURNAROUND:</b> 14 Days or 35 Days
<b>MATRICES:</b> Aqueous/Soil/Sediment*

**SIGNIFICANT FEATURES**

! The analyses are suitable for aqueous, soil, or sediment samples at low to medium concentration levels.

**REVISIONS/MODIFICATIONS**

The following is a list of the significant changes from the ILM02.1 SOW that are incorporated in the ILM03.0 SOW:

- ! An analytical spike and an aqueous Laboratory Control Sample (LCS) are not required when analyzing field samples for
- ! Terminology was added to require that sample coolers be returned to the appropriate sampling office within 14 days following shipment receipt.
- ! Additional instrumentation requirements were added for greater than 500 samples per month capacity.
- ! For cyanide water analysis, the LCS requirement was changed from "not required" to "using the distilled ICV as the LC

**RECOMMENDED USES**

This Contract Laboratory Program (CLP) method is recommended for broad spectrum analysis to define the nature and extent of potential site contamination during Site Investigation (SI) and Remedial Investigation/Feasibility Study (RI/FS) activities and to verify that Remedial Design/Remedial Action (RD/RA) activities comply with pre-determined clean-up standards. This method is suitable when a 14 day or 35 day turnaround for results is adequate. It is recommended for samples from known or suspected hazardous waste sites where potential contamination may be present at significant risk levels.

\* This method is not applicable to sediment samples with high moisture content.

**ANALYTES/CRDLs**

The parameters included in the analysis and the Contract Required Detection Limits (CRDLs) are listed in Attachment 1.

ATTACHMENT 1

USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR INORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
ILM03.0

TARGET ANALYTE LIST

Analyte	Aqueous CRDL (ug/L,ppb)	Soil CRDL (mg/Kg,ppm)
Aluminum	200	40
Antimony	60	12
Arsenic	10	2
Barium	200	40
Beryllium	5	1
Cadmium	5	1
Calcium	5000	1000
Chromium	10	2
Cobalt	50	10
Copper	25	5
Iron	100	20
Lead	3	0.6

Analyte	Aqueous CRDL (ug/L,ppb)	Soil CRDL (mg/Kg,ppm)
Magnesium	5000	1000
Manganese	15	3
Mercury	0.2	0.1
Nickel	40	8
Potassium	5000	1000
Selenium	5	1
Silver	10	2
Sodium	5000	1000
Thallium	10	2
Vanadium	50	10
Zinc	20	4
Cyanide	10	2

**NOTE:**

! The sample-specific CRDLs for soil samples will be adjusted for percent moisture and will be higher than those listed a

**TITLE:** USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR INORGANIC ANALYSIS  
MULTI-MEDIA, HIGH CONCENTRATION

<b>DOCUMENT NUMBER:</b>	IHC01.2
<b>DOCUMENT DATE:</b>	Not Applicable
<b>EFFECTIVE DATES:</b>	May 15, 1991 through November 30, 1993
<b>CONCENTRATION:</b>	High
<b>DATA TURNAROUND:</b>	35 Days
<b>MATRICES:</b>	Liquid/Solid/Multi-phase

**SIGNIFICANT FEATURES**

- ! The analyses are suitable for highly contaminated samples.
- ! The analyses are acceptable for liquid, solid, or multiphase samples. Multi-phase samples are separated into water miscible liquid, water immiscible liquid, or solid phases. Each phase is analyzed separately.
- ! The analyses include conductivity and pH; potassium is not included.

**REVISIONS/MODIFICATIONS**

The IHC01.1 and IHC01.2 revisions to the IHC01.0 SOW do not significantly affect data useability.

**RECOMMENDED USES**

This Routine Analytical Services (RAS) method is recommended for pre-remedial, remedial, or removal projects where high concentrations of inorganic contaminants are suspected and a thirty five day turnaround for results is adequate. It is recommended for samples obtained from drummed material, waste pits or lagoons, piles of waste, tanker trucks, onsite tanks, or apparent contaminated soil areas. The waste material may be industrial process waste, byproducts, raw materials, intermediates and contaminated products. Samples may be spent oil, spent solvents, paint wastes, metal treatment wastes, and polymer formulations.

The method is suitable for solids, liquids, or multiphase samples, a phase being either water miscible liquid, water immiscible liquid, or solid. A phase separation step is applied prior to digestion. Each phase is analyzed and reported as a separate

**ANALYTES/CRQLs**

The parameters included in the analysis and the Contract Required Quantitation Limits (CRQLs) are listed in .

ATTACHMENT I (page 1 of 1)

USEPA CONTRACT LABORATORY PROGRAM  
 STATEMENT OF WORK FOR INORGANIC ANALYSIS  
 MULTI-MEDIA, HIGH CONCENTRATION  
 IHC01.2

TARGET ANALYTE LIST

Analyte	CRQL (mg/Kg, ppm)
Aluminum	80
Antimony	20
Arsenic	5
Barium	80
Beryllium	5
Cadmium	10
Calcium	80
Chromium	10
Cobalt	20
Copper	40
Iron	20
Lead	10
Magnesium	80

Analyte	CRQL (mg/Kg, ppm)
Manganese	10
Mercury	0.3
Nickel	20
Selenium	5
Silver	10
Sodium	80
Thallium	20
Vanadium	20
Zinc	10
Cyanide	1.5
pH	NA
Conductivity	3.0 (µmhos/cm)

**NOTE:**

- ! ALL CRQLs ARE BASED ON WET WEIGHT AND APPLY TO SOLID AND LIQUID SAMPLES.
- ! RESULTS FOR BOTH SOLID AND LIQUID SAMPLES ARE REPORTED AS MG/KG, WET WEIGHT.

**TITLE: USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ANALYSIS OF POLYCHLORINATED DIBENZO-p-DIOXINS (PCDD)  
AND POLYCHLORINATED DIBENZOFURANS (PCDF)  
MULTI-MEDIA, MULTI-CONCENTRATION**

<b>DOCUMENT NUMBER:</b> DFLMO1.2
<b>DOCUMENT DATE:</b> Not Applicable
<b>EFFECTIVE DATES:</b> May 1992 through May 1994
<b>CONCENTRATION:</b> Low to Medium
<b>DATA TURNAROUND:</b> 45 days
<b>MATRICES:</b> Aqueous/Soil/Fly Ash/Chemical Waste

**SIGNIFICANT FEATURES**

- ! The parameters include 2,3,7,8-substituted Tetra-, Penta-, Hexa-, Hepta-, and Octachlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs).
- ! Total homologue concentrations are reported for a given level of chlorination (i.e. Total TCDD, Total PCDF, etc.).
- ! 2,3,7,8-TCDD toxic equivalence is determined using all 2,3,7,8-substituted isomers.
- ! The dioxins and furans are analyzed by High Resolution Gas Chromatography and Low Resolution Mass Spectrometry (HRGC/LRM).
- ! Second column confirmation is required if the toxic equivalence is greater than or equal to 0.7ppb (soil or fly ash), 7ppt (aqueous) or 7ppm (chemical waste).
- ! Chemical waste includes oils, stillbottoms, oily sludge, wet fuel oil, and surface water heavily contaminated with oils. Soil samples include those from areas where chemical waste is present.

**REVISIONS/MODIFICATIONS**

Revisions DFLMO1.1 (September 1991) and DFLMO1.2 (April 1992) do not significantly affect data useability.

**RECOMMENDED USES**

This Contract Laboratory Program (CLP) method is recommended for analysis of polychlorinated dioxins and furans to define the nature and extent of site contamination during Site Investigation (SI) and Remedial Investigation/Feasibility Study (RI/FS) activities and to verify that Remedial Investigation (RI) and Remedial Action (RA) activities comply with pre-determined clean-up standards. This method is suitable when a forty five day turnaround for results is recommended for samples from known or suspected hazardous waste sites where potential contamination may be present at significant risk. The method is not applicable to sediment samples with high moisture content.

**ANALYTES/CRQLs**

The parameters included in the analysis and the Contract Required Quantitation Limits (CRQLs) are listed in Table 1.

TABLE 1

**USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ANALYSIS OF POLYCHLORINATED  
DIBENZO-p-DIOXINS (PCDD) AND POLYCHLORINATED DIBENZOFURANS (PCDF)  
MULTI-MEDIA, MULTI-CONCENTRATION  
DFLMO1.2**

## TARGET COMPOUND LIST

Compound	Aqueous CRQL (ng/L,ppt)	Low Soil CRQL <sup>A</sup> (ug/Kg,ppb)	Fly Ash CRQL <sup>A</sup> (ug/Kg,ppb)	Chemical Waste CRQL (ug/Kg,ppb)	TEFs <sup>B</sup>
2,3,7,8-TCDD	10	1.0	1.0	10	1.0
2,3,7,8-TCDF	10	1.0	1.0	10	0.10
1,2,3,7,8-PeCDF	25	2.5	2.5	25	0.05
1,2,3,7,8-PeCDD	25	2.5	2.5	25	0.50
2,3,4,7,8-PeCDF	25	2.5	2.5	25	0.50
1,2,3,4,7,8-HxCDF	25	2.5	2.5	25	0.10
1,2,3,6,7,8-HxCDF	25	2.5	2.5	25	0.10
1,2,3,4,7,8-HxCDD	25	2.5	2.5	25	0.10
1,2,3,6,7,8-HxCDD	25	2.5	2.5	25	0.10
1,2,3,7,8,9-HxCDD	25	2.5	2.5	25	0.10
2,3,4,6,7,8-HxCDF	25	2.5	2.5	25	0.10
1,2,3,7,8,9-HxCDF	25	2.5	2.5	25	0.10
1,2,3,4,6,7,8-HpCDF	25	2.5	2.5	25	0.01
1,2,3,4,6,7,8-HpCDD	25	2.5	2.5	25	0.01
1,2,3,4,7,8,9-HpCDF	25	2.5	2.5	25	0.01
OCDD	50	5.0	5.0	50	0.001
OCDF	50	5.0	5.0	50	0.001

Homologue Compounds	Number of Possible Isomers	Number of 2,3,7,8-Substituted Isomers
TOTAL TCDD	22	1
TOTAL TCDF	38	1
TOTAL PeCDD	14	1
TOTAL PeCDF	28	2
TOTAL HxCDD	10	3
TOTAL HxCDF	16	4
TOTAL HpCDD	2	1
TOTAL HpCDF	4	2
OCDD	1	1
OCDF	1	1

## NOTE:

A. The sample-specific CRQLs for soils and fly ash samples will be adjusted for percent moisture and will be higher than those listed above

B. TEF = 2,3,7,8-TCDD Toxic Equivalence Factors (TEFs) for the PCDDs/PCDFs.

<b>DOCUMENT NUMBER:</b> Not Applicable
<b>DOCUMENT DATE:</b> October 1992
<b>EFFECTIVE DATES:</b> December 1992 through June 1994
<b>CONCENTRATION:</b> Low
<b>DATA TURNAROUND:</b> 14 Days
<b>MATRICES:</b> Aqueous

**SIGNIFICANT FEATURES**

- ! The parameters include volatile, semivolatile, and pesticide/PCB compounds.
- ! Volatiles and semivolatiles are analyzed by GC/MS; pesticides/PCBs are analyzed by GC/ECD.
- ! All parameters require significantly reduced CRQLs as compared to the OLM01.9 SOW.
- ! A 25mL aliquot of sample is purged for volatiles analysis.
- ! Analysis of a Laboratory Control Sample (LCS) for each parameter is required.
- ! Semivolatile and pesticide/PCB samples must be extracted by continuous liquid-liquid extraction procedures.

**REVISIONS/MODIFICATIONS**

The following is a list of the significant changes from the 6/91 Low Concentration SOW:

- ! The requirement for a diskette deliverable was removed.
- ! Technical acceptance criteria for the volatile LCS were established.
- ! Potential action against a laboratory for Performance Evaluation (PE) scores below 75% was added.

**RECOMMENDED USES**

This Contract Laboratory Program (CLP) method is recommended for broad spectrum analysis to define the nature and level organic\* contamination in water supplies during Site Investigation (SI) and Remedial Investigation/Feasibility Study verify that Remedial Design/Remedial Action (RD/RA) activities comply with pre-determined clean-up standards. This method provides lower detection limits than SOW OLM01.9 and can aid in the determination of low level contamination in public drinking water samples are expected to be from drinking water and well/ground water sources around Superfund sites. This method is suitable and the turnaround for results is adequate.

\* This method should not be used for low concentration volatile organics analyses in Region I when comparison to the drinking water Contaminant Levels (MCLs) is required. The Region I EPA 524.2 standard specifications should be utilized for this purpose.

**ANALYTES/CRQLs**

The parameters included in the analysis and the Contract Required Quantitation Limits (CRQLs) are listed in Attachment 1.

SUPERFUND ANALYTICAL METHODS FOR LOW CONCENTRATION  
WATER FOR ORGANICS ANALYSIS  
10/92

TARGET COMPOUND LIST - VOLATILES

COMPOUND	CRQL (ug/L, ppb)
Chloromethane	1
Bromomethane	1
Vinyl chloride	1
Chloroethane	1
Methylene chloride	2
Acetone	5
Carbon disulfide	1
1,1-Dichloroethene	1
1,1-Dichloroethane	1
cis-1,2-Dichloroethene	1
trans-1,2-Dichloroethene	1
Chloroform	1
1,2-Dichloroethane	1
2-Butanone	5
Bromochloromethane	1
1,1,1-Trichloroethane	1
Carbon tetrachloride	1
Bromodichloromethane	1
1,2-Dichloropropane	1
cis-1,3-Dichloropropene	1

COMPOUND	CRQL (ug/L, ppb)
Trichloroethene	1
Dibromochloromethane	1
1,1,2-Trichloroethane	1
Benzene	1
trans-1,3-Dichloropropene	1
Bromoform	1
4-Methyl-2-pentanone	5
2-Hexanone	5
Tetrachloroethene	1
1,1,2,2-Tetrachloroethane	1
1,2-Dibromoethane	1
Toluene	1
Chlorobenzene	1
Ethylbenzene	1
Styrene	1
Xylenes (Total)	1
1,3-Dichlorobenzene	1
1,4-Dichlorobenzene	1
1,2-Dichlorobenzene	1
1,2-Dibromo-3-chloropropane	1

ATTACHMENT I (page 2 of 3)

SUPERFUND ANALYTICAL METHODS FOR LOW CONCENTRATION  
WATER FOR ORGANICS ANALYSIS

10/92

TARGET COMPOUND LIST - SEMIVOLATILES

COMPOUND	CRQL (ug/L, ppb)
Phenol	5
bis-(2-chloroethyl)ether	5
2-Chlorophenol	5
2-Methylphenol	5
2,2'-oxybis(1-chloropropane)	5
4-Methylphenol	5
N-Nitroso-di-n-propylamine	5
Hexachloroethane	5
Nitrobenzene	5
Isophorone	5
2-Nitrophenol	5
2,4-Dimethylphenol	5
bis-(2-Chloroethoxy)methane	5
2,4-Dichlorophenol	5
1,2,4-Trichlorobenzene	5
Naphthalene	5
4-Chloroaniline	5
Hexachlorobutadiene	5
4-Chloro-3-methylphenol	5
2-Methylnaphthalene	5
Hexachlorocyclopentadiene	5
2,4,6-Trichlorophenol	5
2,4,5-Trichlorophenol	20
2-Chloronaphthalene	5
2-Nitroaniline	20
Dimethylphthalate	5
Acenaphthylene	5
2,6-Dinitrotoluene	5
3-Nitroaniline	20
Acenaphthene	5

COMPOUND	CRQL (ug/L, ppb)
2,4-Dinitrophenol	20
4-Nitrophenol	20
Dibenzofuran	5
2,4-Dinitrotoluene	5
Diethylphthalate	5
4-Chlorophenyl-phenylether	5
Fluorene	5
4-Nitroaniline	20
4,6-Dinitro-2-methylphenol	20
N-Nitrosodipenylamine	5
4-Bromophenyl-phenylether	5
Hexachlorobenzene	5
Pentachlorophenol	20
Phenanthrene	5
Anthracene	5
Di-n-butylphthalate	5
Fluoranthene	5
Pyrene	5
Butylbenzylphthalate	5
3,3'-Dichlorobenzidine	5
Benzo(a)anthracene	5
Chrysene	5
bis(2-ethylhexyl)phthalate	5
Di-n-octylphthalate	5
Benzo(b)fluoranthene	5
Benzo(k)fluoranthene	5
Benzo(a)pyrene	5
Indeno(1,2,3-cd)pyrene	5
Dibenzo(a,h)anthracene	5
Benzo(g,h,i)perylene	5

ATTACHMENT 1 (page 3 of 3)

SUPERFUND ANALYTICAL METHODS FOR LOW CONCENTRATION  
WATER FOR ORGANICS ANALYSIS

10/92

TARGET COMPOUND LIST - PESTICIDE/PCB

PARAMETER	CRQL (ug/L, ppb)
alpha-BHC	0.01
beta-BHC	0.01
delta-BHC	0.01
gamma-BHC (Lindane)	0.01
Heptachlor	0.01
Aldrin	0.01
Heptachlor epoxide	0.01
Endosulfan I	0.01
Dieldrin	0.02
4,4'-DDE	0.02
Endrin	0.02
Endosulfan II	0.02
4,4'-DDD	0.02
Endosulfan sulfate	0.02

PARAMETER	CRQL (ug/L, ppb)
4,4'-DDT	0.02
Methoxychlor	0.10
Endrin ketone	0.02
Endrin aldehyde	0.02
alpha-Chlordane	0.01
gama-Chlordane	0.01
Toxaphene	1.0
Aroclor-1016	0.2
Aroclor-1221	0.4
Aroclor-1232	0.2
Aroclor-1242	0.2
Aroclor-1248	0.2
Aroclor-1254	0.2
Aroclor-1260	0.2

**TITLE: USEPA CONTRACT LABORATORY PROGRAM  
WATER QUALITY PARAMETERS (WQP) IN MULTI-CONCENTRATION WATER**

<b>DOCUMENT NUMBER:</b> Not Applicable
<b>DOCUMENT DATE:</b> June 1993
<b>EFFECTIVE DATES:</b> July 1993 through June 1994
<b>CONCENTRATION:</b> Low to Medium
<b>DATA TURNAROUND:</b> 14 Days or 35 Days
<b>MATRICES:</b> Aqueous

**SIGNIFICANT FEATURES**

- ! The parameters include Alkalinity, Ammonia-Nitrogen, Total Organic Carbon (TOC), Chemical Oxygen Demand (COD), Chloride, Nitrate/Nitrite, Total Phosphorous, Total Dissolved Solids (TDS), Total Suspended Solids (TSS), and Sulfate.
- ! Ion chromatography may be used in place of conventional methods for the determination of Chloride, Nitrate/Nitrite, Phosphorous, and Sulfate.
- ! The laboratory IDL for a parameter may exceed the CRDL if the sample concentrations are greater than 5xIDL.

**REVISIONS/MODIFICATIONS**

The following is a list of the significant changes from the 2/93 version that are incorporated in the 6/93 SOW:

- ! The CRDL for Total Dissolved Solids was elevated from 4,000 ug/L to 10,000 ug/L.
- ! The analysis procedure for Total Organic Carbon (TOC) was changed from following a step-by-step procedure for calibrating and standardizing the TOC analyzer to performing these functions according to the manufacturers specifications.

**RECOMMENDED USES**

These Contract Laboratory Program (CLP) methods are intended for use only with aqueous samples. They are recommended for analysis of selected water quality parameters to define the nature and extent of potential site contamination during Site Investigation (SI) and Remedial Investigation/Feasibility Study (RI/FS) activities and to verify that Remedial Design/Remedial Action (RD/RA) activities comply with pre-determined clean-up standards. These methods may also be used for monitoring the wastewater treatment processes of pretreatment plants and Publicly Owned Treatment Works (POTWs). This method is suitable when a 14 day or 35 day turnaround for results is adequate. It is recommended for samples from known or suspected hazardous waste sites where potential contamination may be present at significant risk levels.

**ANALYTES/CRDLs**

The parameters included in the analysis and the Contract Required Detection Limits (CRDLs) are listed in Attachment

ATTACHMENT 1

USEPA CONTRACT LABORATORY PROGRAM  
WATER QUALITY PARAMETERS (WQP) IN MULTI-CONCENTRATION WATER  
6/93

PARAMETER LIST - WATER QUALITY PARAMETERS

<b>PARAMETER</b>	<b>CRDL (ug/L, ppb)</b>
Alkalinity	2000
Ammonia-Nitrogen	1000
Total Organic Carbon (TOC)	100
Chemical Oxygen Demand (COD)	3000
Chloride	2000
Nitrate/Nitrite	100
Total Phosphorous	100
Total Dissolved Solids (TDS)	10000
Total Suspended Solids (TSS)	4000
Sulfate	2000

**TITLE: USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR INORGANICS ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION**

<b>DOCUMENT NUMBER:</b> ILM04.0
<b>DOCUMENT DATE:</b> Not Applicable
<b>EFFECTIVE DATES:</b> August 1995 through May 1999
<b>CONCENTRATION:</b> Low to Medium
<b>DATA TURNAROUND:</b> 14 Days or 35 Days
<b>MATRICES:</b> Aqueous/Soil/Sediment *

**SIGNIFICANT FEATURES**

- ! Analyses are suitable for aqueous, soil or sediment samples at low to medium concentration levels.
- ! Metals except mercury are analyzed by furnace AA, flame AA, and/or ICP-AES; mercury by cold vapor AA; and cyanide by spe distillation.

**RECOMMENDED USES**

This Contract Laboratory Program (CLP) method is recommended for broad spectrum analysis to define the nature and extent of p during Site Investigation (SI) and Remedial Investigation/Feasibility Study (RI/FS) activities and to verify that Remedial Design/Rem activities comply with pre-determined clean-up standards. This method is suitable when a 14 day or 35 day turnaround for results is a for samples from known or suspected hazardous waste sites where potential contamination may be present at significant risk levels.

\* This method is not applicable to soil/sediment samples with high moisture content.

**REVISIONS/MODIFICATIONS**

The following is a list of significant changes from the SOW ILM03.0 that are incorporated in the SOW ILM04.0:

- ! New procedure: The lab must measure the sample shipping cooler temperature at time of sample receipt using the cooler temperat present, located in the cooler. The lab must contact CLASS if the cooler's temperature exceeds 10°C.
- ! If dissolved metals are required by the EPA Regional offices and there are no instructions on the Traffic Report, the lab must dige dissolved metals.
- ! If elements (e.g., As, Pb, Se, Tl) traditionally analyzed by GFAA are analyzed by ICP, the spiking levels for Furnace AA must be are ≤CRDL).
- ! Additional analysis frequency requirement for ICP CRDL and ICS standards: also analyzed at a frequency of not greater than 20 a analysis run.
- ! For analytes with CRDLs ≤10 µg/L, ICP ICSA results must be within ±2x CRDL of the true value; otherwise, these analytes must alternate method (e.g., GFAA) for samples analyzed since the last compliant ICSA.
- ! For analytes with CRDLs ≤10 µg/L, the ICP ICSA results must be reported from an undiluted sample analysis.
- ! Independent ICP Interference Check Samples: Elements As, Sb, Se, Tl were added (0.1, 0.6, 0.05, and 0.1 mg/L, respectively); A lowered (0.2 and 0.05 mg/L, respectively).
- ! Alternate methods for catastrophic ICP failure are no longer included.
- ! Cyanide spiking concentration for aqueous and soil matrix spikes: 100 µg/L in the distillate (i.e., the final sample solution prepare the amount of sample used).
- ! Mercury - clarification of the CRDL standard requirement in the calibration curve for manual cold vapor AA; a linear regression e automated cold vapor AA analysis.

**ANALYTES/CRDLS**

The parameters included in the analysis and the Contract Required Detection Limits (CRDLs) are listed in Attachment I.

ATTACHMENT I

USEPA CONTRACT LABORATORY PROGRAM  
 STATEMENT OF WORK FOR INORGANICS ANALYSIS  
 MULTI-MEDIA, MULTI-CONCENTRATION  
 ILM04.0

TARGET ANALYTE LIST

Analyte	Aqueous CRDL (ug/L, ppb)	Soil CRDL (mg/kg, ppm)
Aluminum	200	40
Antimony	60	12
Arsenic	10	2
Barium	200	40
Beryllium	5	1
Cadmium	5	1
Calcium	5000	1000
Chromium	10	2
Cobalt	50	10
Copper	25	5
Iron	100	20
Lead	3	0.6

Analyte	Aqueous CRDL (ug/L, ppb)	Soil CRDL (mg/kg, ppm)
Magnesium	5000	1000
Manganese	15	3
Mercury	0.2	0.1
Nickel	40	8
Potassium	5000	1000
Selenium	5	1
Silver	10	2
Sodium	5000	1000
Thallium	10	2
Vanadium	50	10
Zinc	20	4
Cyanide	10	2.5

**NOTE:**

- ! The CRDLs for soils are based on the following: for all metals (except mercury) - 1 gram sample, 200 mL final digestate volume mercury - 0.2 gram sample, 100 mL final sample solution volume, 100% solids; and for cyanide - 1 gram sample, 250 mL final d distillate taken for manual spectrophotometric determination, and 100% solids.
- ! The sample-specific CRDLs for soil/sediment samples will be adjusted for percent solids and will be higher than those listed above.

**TITLE: USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION**

<b>DOCUMENT NUMBER:</b> OLM03.2
<b>DOCUMENT DATE:</b> Not Applicable
<b>EFFECTIVE DATES:</b> July 1994 through February 1999
<b>CONCENTRATION:</b> Low to Medium
<b>DATA TURNAROUND:</b> 14 Days or 35 Days
<b>MATRICES:</b> Aqueous/Soil/Sediment*

**SIGNIFICANT FEATURES**

- ! The parameters include volatile, semivolatile, and pesticide/PCB compounds.
- ! Volatiles and semivolatiles are analyzed by GC/MS; pesticides/PCBs are analyzed by GC/ECD.
- ! Major Tentatively Identified Compounds (TICs) are reported for GC/MS analyses.
- ! All pesticide/PCB analyses require second column confirmation by GC/ECD. Pesticide/PCB compounds are confirmed by GC concentration to be detected by GC/MS. (Concentrations in the sample extract at or above 10 ng/μL for pesticides, 50 ng/μL for Toxaphene should enable the lab to confirm by GC/MS analysis.)

**RECOMMENDED USES**

This Contract Laboratory Program (CLP) method is recommended for broad spectrum analysis to define the nature and extent of contamination during Site Investigation (SI) and Remedial Investigation/Feasibility Study (RI/FS) activities and to verify that Remedial Action (RD/RA) activities comply with the pre-determined clean-up standards. This method is suitable when a 14 day or 35 day turnaround is recommended for samples from known or suspected hazardous waste sites where potential contamination may be present at significant levels.

\* This method is not applicable to soil/sediment samples with high moisture content.

**REVISIONS/MODIFICATIONS**

The following is a list of significant changes from the SOW OLM01.9 SOW that are incorporated in the SOW OLM03.1 (including this revision):

**Volatiles**

- ! Medium level soil/sediment extract and purge solution preparation procedures were revised for the method blank, MS/MSD, and purge solution.
- ! Minimum sample amount for low level soil/sediment analysis was lowered to 0.5 g.
- ! Minimum initial and continuing calibration Relative Response Factor (RRF) for 1,1,2,2-Tetrachloroethane was lowered to 0.30.
- ! In addition to % recovery criteria, System Monitoring Compounds are evaluated based on Relative Retention Time (RRT) criteria.
- ! The concentration of Methylene Chloride in method, storage, and instrument blanks must be less than 2.5 times the CRQL.

**Semivolatiles**

- ! Low level soil CRQLs were changed from 800 ug/kg to 830 ug/kg for the following compounds: 2,4,5-Trichlorophenol, 2-Nitrophenol, 4-Nitrophenol, 4-Nitroaniline, 4,6-Dinitro-2-methylphenol, and Pentachlorophenol.
- ! The minimum RRF for initial and continuing calibrations for Acenaphthylene and Acenaphthene was changed to 0.900.
- ! The RRT of each surrogate must be within  $\pm 0.06$  RRT units of its RRT in the continuing calibration standard. The sample(s) RRT criteria are not met.
- ! The GPC blank must contain target compounds at less than the CRQL, except phthalate esters (less than 5 times the CRQL).

**Volatiles and Semivolatiles**

- ! GC/MS Performance Check: Background subtraction must be performed using a single scan acquired no more than 20 scans prior to the sample (VOA) or DFTPP (SVOA).
- ! The number of volatile organic TICs was raised from 10 to 30; the number of semivolatile organic TICs was raised from 20 to 30 and summed separately (not included in the 30). For both fractions, the data collection window is specified as 30 sec before the start of the sample and 30 sec after the last target analyte.
- ! The non-TCL library search is performed using NIST/EPA/NIH (1992 or later) and/or Wiley (1991 or later) or equivalent.

#### Pesticides/PCBs

- ! Packed columns must not be used for analysis.
- ! Initial and continuing calibration PEM Resolution Criteria are  $\geq 90\%$ ; %D criteria are  $\geq -25\%$  and  $\leq 25\%$ .
- ! Initial calibration %RSD criteria are  $\leq 20\%$  except for alpha-BHC and delta-BHC which are  $\leq 25\%$ .
- ! PEMs, INDAs, INDBs and instrument blanks must meet initial calibration criteria.
- ! Surrogate advisory limits are 30-150%. Method blank surrogates must meet criteria.
- ! Detailed Sulfur Cleanup Blank preparation and QC acceptance/corrective action procedures were added.

#### Semivolatiles and Pesticides/PCBs

- ! Continuous L/L extraction procedures with and without hydrophobic membranes are provided for sample preparation.
- ! GPC calibration solution concentrations changed for bis(2-Ethylhexyl)phthalate (0.5 mg/mL) and Methoxychlor (0.1 mg/mL).

#### All Fractions

- ! The lab must measure the sample shipping cooler temperature at time of sample receipt using the cooler temperature indicator in the cooler. The lab must contact CLASS if the cooler's temperature exceeds  $10^{\circ}\text{C}$ .
- ! Specifications for analysis of multiphase samples are included.
- ! Detailed requirements were added for sample collection and preservation, standard analysis and documentation, and corrective standards, mixture standards, and blanks.
- ! The MS/MSD are analyzed and reported at the same dilution as the least dilute sample for which the original sample results are reported.

The following are significant changes from the OLM03.0 or OLM03.1 revision that are incorporated in the OLM03.2 revision:

- ! Semivolatiles: Limits number of searched alkanes to 20 suspected alkane peaks of greatest apparent concentration. Alkanes are reported on 30 TICs.
- ! Semivolatiles: Revised for clarification - if Internal Standard (IS) recoveries were outside criteria for a sample used for the MS sample extract is required only if IS recovery criteria were met in both the MS and MSD.
- ! Pesticide/PCB: The pesticide GPC calibration check solution contains Endrin and Dieldrin at 0.5 ug/mL for a 2 mL GPC loop; contains Aroclor 1016 and Aroclor 1260 in methylene chloride at 0.5 ug/mL for a 2 mL GPC loop.
- ! All fractions: Ampulated standard solution extracts in glass vials may be used until the manufacturer's expiration date, or 2 yrs if no expiration date is provided.

#### ANALYTES/CRQLs

The parameters included in the analysis and the Contract Required Quantitation Limits (CRQLs) are listed in Attachment I.

**USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
OLM03.2**

## TARGET COMPOUND LIST - VOLATILES

Compound	Aqueous CRQL ug/L, ppb	Low Soil CRQL ug/kg, ppb	Medium Soil CRQL ug/kg, ppb
Chloromethane	10	10	1200
Bromomethane	10	10	1200
Vinyl Chloride	10	10	1200
Chloroethane	10	10	1200
Methylene Chloride	10	10	1200
Acetone	10	10	1200
Carbon Disulfide	10	10	1200
1,1-Dichloroethene	10	10	1200
1,1-Dichloroethane	10	10	1200
1,2-Dichloroethene (total)	10	10	1200
Chloroform	10	10	1200
1,2-Dichloroethane	10	10	1200
2-Butanone	10	10	1200
1,1,1-Trichloroethane	10	10	1200
Carbon Tetrachloride	10	10	1200
Bromodichloromethane	10	10	1200
1,2-Dichloropropane	10	10	1200
cis-1,3-Dichloropropene	10	10	1200
Trichloroethene	10	10	1200
Dibromochloromethane	10	10	1200
1,1,2-Trichloroethane	10	10	1200
Benzene	10	10	1200
trans-1,3-Dichloropropene	10	10	1200
Bromoform	10	10	1200
4-Methyl-2-Pentanone	10	10	1200
2-Hexanone	10	10	1200
Tetrachloroethene	10	10	1200
1,1,2,2-Tetrachloroethane	10	10	1200
Toluene	10	10	1200
Chlorobenzene	10	10	1200
Ethylbenzene	10	10	1200
Styrene	10	10	1200

Xylenes (Total)	10	10	1200
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**NOTE:**

! The sample-specific CRQLs for soil/sediment samples will be adjusted for percent moisture and will be higher than those listed above.

**USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
OLM03.2**

## TARGET COMPOUND LIST - SEMIVOLATILES

Compound	Aqueous CRQL ug/L, ppb	Low Soil CRQL ug/kg, ppb	Medium Soil CRQL ug/kg, ppb
Phenol	10	330	10000
bis(2-Chloroethyl)ether	10	330	10000
2-Chlorophenol	10	330	10000
1,3-Dichlorobenzene	10	330	10000
1,4-Dichlorobenzene	10	330	10000
1,2-Dichlorobenzene	10	330	10000
2-Methylphenol	10	330	10000
2,2'-oxybis(1-Chloropropane)	10	330	10000
4-Methylphenol	10	330	10000
N-Nitroso-di-n-propylamine	10	330	10000
Hexachloroethane	10	330	10000
Nitrobenzene	10	330	10000
Isophorone	10	330	10000
2-Nitrophenol	10	330	10000
2,4-Dimethylphenol	10	330	10000
bis(2-Chloroethoxy)methane	10	330	10000
2,4-Dichlorophenol	10	330	10000
1,2,4-Trichlorobenzene	10	330	10000
Naphthalene	10	330	10000
4-Chloroaniline	10	330	10000
Hexachlorobutadiene	10	330	10000
4-Chloro-3-methylphenol	10	330	10000
2-Methylnaphthalene	10	330	10000
Hexachlorocyclopentadiene	10	330	10000
2,4,6-Trichlorophenol	10	330	10000
2,4,5-Trichlorophenol	25	830 <sup>*</sup>	25000
2-Chloronaphthalene	10	330	10000
2-Nitroaniline	25	830 <sup>*</sup>	25000
Dimethylphthalate	10	330	10000
Acenaphthylene	10	330	10000
2,6-Dinitrotoluene	10	330	10000
3-Nitroaniline	25	830 <sup>*</sup>	25000

**NOTE:**

- ! The sample-specific CRQLs for soil/sediment samples will be adjusted for percent moisture and will be higher than those listed above.
- \* Low level soil CRQLs were changed from 800 µg/kg in SOW OLM01.9 to 830 µg/kg in SOW OLM03.2.

**USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
OLM03.2**

## TARGET COMPOUND LIST - SEMIVOLATILES

Compound	Aqueous CRQL ug/L, ppb	Low Soil CRQL ug/kg, ppb	Medium Soil CRQL ug/kg, ppb
Acenaphthene	10	330	10000
2,4-Dinitrophenol	25	830 *	25000
4-Nitrophenol	25	830 *	25000
Dibenzofuran	10	330	10000
2,4-Dinitrotoluene	10	330	10000
Diethylphthalate	10	330	10000
4-Chlorophenyl-phenylether	10	330	10000
Fluorene	10	330	10000
4-Nitroaniline	25	830 *	25000
4,6-Dinitro-2-methylphenol	25	830 *	25000
N-Nitrosodiphenylamine	10	330	10000
4-Bromophenyl-phenylether	10	330	10000
Hexachlorobenzene	10	330	10000
Pentachlorophenol	25	830 *	25000
Phenanthrene	10	330	10000
Anthracene	10	330	10000
Carbazole	10	330	10000
Di-n-butylphthalate	10	330	10000
Fluoranthene	10	330	10000
Pyrene	10	330	10000
Butylbenzylphthalate	10	330	10000
3,3'-Dichlorobenzidine	10	330	10000
Benzo(a)anthracene	10	330	10000
Chrysene	10	330	10000
bis(2-Ethylhexyl)phthalate	10	330	10000
Di-n-octylphthalate	10	330	10000
Benzo(b)fluoranthene	10	330	10000
Benzo(k)fluoranthene	10	330	10000
Benzo(a)pyrene	10	330	10000
Indeno(1,2,3-cd)pyrene	10	330	10000
Dibenzo(a,h)anthracene	10	330	10000

Benzo(g,h,i)perylene	10	330	10000
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**NOTE:**

- ! The sample-specific CRQLs for soil/sediment samples will be adjusted for percent moisture and will be higher than those listed above.
- \* Low level soil CRQLs were changed from 800 µg/kg in SOW OLM01.9 to 830 µg/kg in SOW OLM03.2.

**USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANIC ANALYSIS  
MULTI-MEDIA, MULTI-CONCENTRATION  
OLM03.2**

## TARGET COMPOUND LIST - PESTICIDES/PCBS

Compound	Aqueous CRQL ug/L, ppb	Soil CRQL ug/kg, ppb
alpha-BHC	0.050	1.7
beta-BHC	0.050	1.7
delta-BHC	0.050	1.7
gamma-BHC (Lindane)	0.050	1.7
Heptachlor	0.050	1.7
Aldrin	0.050	1.7
Heptachlor epoxide	0.050	1.7
Endosulfan I	0.050	1.7
Dieldrin	0.10	3.3
4,4'-DDE	0.10	3.3
Endrin	0.10	3.3
Endosulfan II	0.10	3.3
4,4'-DDD	0.10	3.3
Endosulfan sulfate	0.10	3.3
4,4'-DDT	0.10	3.3
Methoxychlor	0.50	17
Endrin ketone	0.10	3.3
Endrin aldehyde	0.10	3.3
alpha-Chlordane	0.050	1.7
gamma-Chlordane	0.050	1.7
Toxaphene	5.0	170
Aroclor-1016	1.0	33
Aroclor-1221	2.0	67
Aroclor-1232	1.0	33
Aroclor-1242	1.0	33
Aroclor-1248	1.0	33
Aroclor-1254	1.0	33
Aroclor-1260	1.0	33

**NOTE:**

! The sample-specific CRQLs for soil/sediment samples will be adjusted for percent moisture and will be higher than those listed above.

**TITLE:** USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANICS ANALYSIS  
LOW CONCENTRATION WATER

<b>DOCUMENT NUMBER:</b> OLC02.1
<b>DOCUMENT DATE:</b> Not Applicable
<b>EFFECTIVE DATES:</b> September 1996 through September 2000
<b>CONCENTRATION:</b> Low
<b>DATA TURNAROUND:</b> 14 Days
<b>MATRICES:</b> Aqueous*

**SIGNIFICANT FEATURES**

- ! The parameters include volatile, semivolatile, and pesticide/PCB compounds.
- ! Volatiles and semivolatiles are analyzed by GC/MS; pesticides/PCBs are analyzed by GC/ECD.
- ! All parameters have significantly reduced CRQLs as compared to SOW OLM03.2.
- ! A 25 ml aliquot of sample is purged for volatiles analysis.
- ! Semivolatile samples are extracted by continuous liquid-liquid extraction procedures; pesticide/PCB samples are extracted by separatory funnel or continuous liquid-liquid extraction procedures.
- ! Analysis of a Laboratory Control Sample (LCS) for each parameter is required.
- ! Analysis of an MS/MSD duplicate pair is not required.

**REVISIONS/MODIFICATIONS**

The following is a list of the significant changes from the 10/92 Low Concentration SOW that are incorporated in SOW OLC02.1:

- ! The lab must measure the sample shipping cooler temperature at time of sample receipt using the cooler temperature indicator blank, if present, located in the cooler. The lab must contact CLASS if the cooler's temperature indicator exceeds 10°C.
- ! The term Laboratory Evaluation Sample (LES) replaced Performance Evaluation Sample.
- ! Compound 1,2,4-Trichlorobenzene was removed from the semivolatile Target Compound List (TCL) and added to the volatile TC.
- ! The number of volatile TICs was raised from 10 to 30; the number of semivolatile TICs was raised from 20 to 30. Up to 10 alkanes, which are not part of the 30 semivolatile TICs, are searched.
- ! The separatory funnel extraction method for pesticide/PCB samples was added.
- ! Control limits for recovery of volatile, semivolatile, and pesticide/PCB Laboratory Control Sample (LCS) compounds were modified.

**RECOMMENDED USES**

This Contract Laboratory Program (CLP) method is recommended for broad spectrum analysis to define the nature and extent of potential low level organic contamination in water supplies during Site Investigation (SI) and Remedial Investigation/ Feasibility Study (RI/FS) activities and to verify that Remedial Design/Remedial Action (RD/RA) activities comply with pre-determined clean-up standards. This method attains lower detection limits than SOW OLM03.2 and can aid in the determination of low level contamination in public drinking water supplies. The majority of samples are expected to be from drinking water and well/ground water sources around Superfund sites. This method is suitable when a 14 day turnaround for results is adequate.

\* This method may not be applicable for analysis of aqueous low concentration volatile organic samples when project DQOs require comparison of sample results to the drinking water Maximum Contaminant Levels (MCLs).

**ANALYTES/CRQLs**

The parameters included in the analysis and the Contract Required Quantitation Limits (CRQLs) are listed in Attachment 1.

**USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANICS ANALYSIS  
LOW CONCENTRATION WATER  
OLC02.1**

TARGET COMPOUND LIST - VOLATILES

COMPOUND	CRQL (ug/L, ppb)
Chloromethane	1
Bromomethane	1
Vinyl chloride	1
Chloroethane	1
Methylene chloride	2
Acetone	5
Carbon disulfide	1
1,1-Dichloroethene	1
1,1-Dichloroethane	1
cis-1,2-Dichloroethene	1
trans-1,2-Dichloroethene	1
Chloroform	1
1,2-Dichloroethane	1
2-Butanone	5
Bromochloromethane	1
1,1,1-Trichloroethane	1
Carbon Tetrachloride	1
Bromodichloromethane	1
1,2-Dichloropropane	1
cis-1,3-Dichloropropene	1
Trichloroethene	1

COMPOUND	CRQL (ug/L, ppb)
Dibromochloromethane	1
1,1,2-Trichloroethane	1
Benzene	1
trans-1,3-Dichloropropene	1
Bromoform	1
4-Methyl-2-pentanone	5
2-Hexanone	5
Tetrachloroethene	1
1,1,2,2-Tetrachloroethane	1
1,2-Dibromoethane	1
Toluene	1
Chlorobenzene	1
Ethylbenzene	1
Styrene	1
Xylenes (Total)	1
1,3-Dichlorobenzene	1
1,4-Dichlorobenzene	1
1,2-Dichlorobenzene	1
1,2-Dibromo-3-chloropropane	1
1,2,4-Trichlorobenzene	1

**USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANICS ANALYSIS  
LOW CONCENTRATION WATER  
OLC02.1**

## TARGET COMPOUND LIST - SEMIVOLATILES

COMPOUND	CRQL (ug/L, ppb)
Phenol	5
bis(2-Chloroethyl)ether	5
2-Chlorophenol	5
2-Methylphenol	5
2,2'-oxybis(1-Chloropropane)	5
4-Methylphenol	5
N-Nitroso-di-n-propylamine	5
Hexachloroethane	5
Nitrobenzene	5
Isophorone	5
2-Nitrophenol	5
2,4-Dimethylphenol	5
bis(2-Chloroethoxy)methane	5
2,4-Dichlorophenol	5
Naphthalene	5
4-Chloroaniline	5
Hexachlorobutadiene	5
4-Chloro-3-methylphenol	5
2-Methylnaphthalene	5
Hexachlorocyclopentadiene	5
2,4,6-Trichlorophenol	5
2,4,5-Trichlorophenol	20
2-Chloronaphthalene	5
2-Nitroaniline	20
Dimethylphthalate	5
Acenaphthylene	5
2,6-Dinitrotoluene	5
3-Nitroaniline	20

COMPOUND	CRQL (ug/L, ppb)
4-Nitrophenol	20
Dibenzofuran	5
2,4-Dinitrotoluene	5
Diethylphthalate	5
4-Chlorophenyl-phenylether	5
Fluorene	5
4-Nitroaniline	20
4,6-Dinitro-2-methylphenol	20
N-Nitrosodiphenylamine	5
4-Bromophenyl-phenylether	5
Hexachlorobenzene	5
Pentachlorophenol	20
Phenanthrene	5
Anthracene	5
Di-n-butylphthalate	5
Fluoranthene	5
Pyrene	5
Butylbenzylphthalate	5
3,3'-Dichlorobenzidine	5
Benzo(a)anthracene	5
Chrysene	5
bis(2-Ethylhexyl)phthalate	5
Di-n-octylphthalate	5
Benzo(b)fluoranthene	5
Benzo(k)fluoranthene	5
Benzo(a)pyrene	5
Indeno(1,2,3-cd)pyrene	5
Dibenzo(a,h)anthracene	5

Acenaphthene	5
2,4-Dinitrophenol	20

Benzo(g,h,i)perylene	5
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ATTACHMENT 1 (Page 3 of 3)

**USEPA CONTRACT LABORATORY PROGRAM  
STATEMENT OF WORK FOR ORGANICS ANALYSIS  
LOW CONCENTRATION WATER  
OLC02.1**

TARGET COMPOUND LIST - PESTICIDES/PCBS

COMPOUND	CRQL (ug/L, ppb)
alpha-BHC	0.01
beta-BHC	0.01
delta-BHC	0.01
gamma-BHC (Lindane)	0.01
Heptachlor	0.01
Aldrin	0.01
Heptachlor epoxide	0.01
Endosulfan I	0.01
Dieldrin	0.02
4,4'-DDE	0.02
Endrin	0.02
Endosulfan II	0.02
4,4'-DDD	0.02
Endosulfan sulfate	0.02

COMPOUND	CRQL (ug/L,ppb)
4,4'-DDT	0.02
Methoxychlor	0.10
Endrin ketone	0.02
Endrin aldehyde	0.02
alpha-Chlordane	0.01
gamma-Chlordane	0.01
Toxaphene	1.0
Aroclor-1016	0.20
Aroclor-1221	0.40
Aroclor-1232	0.20
Aroclor-1242	0.20
Aroclor-1248	0.20
Aroclor-1254	0.20
Aroclor-1260	0.20



## Analytical Services Available Through Superfund's Analytical Operations Branch/Contract Laboratory Program (CLP)

The Analytical Operations Branch of the Hazardous Site Evaluation Division has 18 analytical services available to meet a variety of needs for Superfund decision-making. The following table shows types of analyses available, statement of work and fact sheet numbers, dates, turnaround times, lower limit of required quantitation, and uses, limitations, average costs, and monthly laboratory capacity. For additional information about a specific service, including target analytes, consult the method-specific fact sheet or call your Regional Sample Control Coordinator or CLP Technical Project Officer, or call the Analytical Operations Branch on (703) 603-8870.

### Analytical Services for Superfund

August 1993

Type of Analysis (Statement of Work No., Fact Sheet Number, or Date)	Date Turnaround Time(s)	Lower Limit of Required Quantitation <sup>1</sup>	Uses/Limitations/Costs/Capacity
Full Organics, Volatiles, Semivolatiles, Pesticides in Water and Soil IOLMO-8, 9240.0-08FS)	35 days 14 days	<b>WATER:</b> <i>Volatiles:</i> 10 µg/L <i>Semivolatiles:</i> 10-25 µg/L <i>Pesticides:</i> 0.05-0.10 µg/L, except methoxychlor 0.5 µg/L; Aroclors 1-2 µg/L, toxaphene 5 µg/L  <b>SOILS:</b> <i>Volatiles:</i> Low conc. 10 µg/Kg; medium conc. 1,200 µg/Kg <i>Semivolatiles:</i> Low conc. 330-800 µg/Kg; medium conc. 10,000-25,000 µg/Kg <i>Pesticides:</i> 1.7-0.3 µg/Kg, except methoxychlor 17 µg/Kg; Aroclors 33-67 µg/Kg, toxaphene 170 µg/Kg	<b>USES:</b> To determine extent of organics contamination; assess potential for risk to human health and environment; determine appropriate clean-up action; determine when remedial actions are complete; determine absence of organic contaminants.  <b>LIMITATIONS:</b> Main survey method to determine general organics concentration. Use for other than low concentration ground and drinking water samples. For suspected high hazard samples, use high concentration organic method.  <b>AVE. COST:</b> \$ 790 per sample (35-day); all fractional \$1,365 per sample (14-day; all fractional)  <b>CAPACITY:</b> 4,300 samples per month (35-day) 700 samples per month (14-day)
Low concentration Volatiles, Semivolatiles, Pesticides in Water (SQW Rev. 10/82, 9240.0-09FS) (available in SAS)	14 days	<b>WATER:</b> <i>Volatiles:</i> 1 µg/L (ketones 5 µg/L) <i>Semivolatiles:</i> 5-20 µg/L <i>Pesticides:</i> 0.01-0.02 µg/L, except methoxychlor 0.1 µg/L; Aroclors 0.2-0.4 µg/L, toxaphene 1.0 µg/L	<b>USES:</b> To determine extent of well/ground water contamination; assess potential for risk to human health; determine appropriate clean-up actions; determine when remedial actions are completed; determine absence of organic contaminants.  <b>LIMITATIONS:</b> Use only for drinking/ground water type samples when concentrations for undiluted samples are not expected to exceed the upper limit of the calibration curves as follows: 25 µg/L for volatiles, 80 µg/L for semivolatiles, and 0.32 µg/L for pesticides except for Aroclors 6.4 µg/L and toxaphene 16 µg/L.  <b>AVE. COST:</b> \$875 per sample (all fractions) \$135 per sample (VGA only)  <b>CAPACITY:</b> 50 samples per month (all fractions) 100 samples per month (VGA only)
Dioxin/Furans in Water, Fly Ash, Soil, and Waste DPLMO-11, 09240.0-07FS)	45 days	<b>WATER:</b> 0.01-0.05 µg/L <b>FLY ASH:</b> 1.5 µg/Kg <b>SOIL:</b> 1.5 µg/Kg <b>WASTE:</b> 10-50 µg/Kg	<b>USES:</b> To determine extent of dioxin/furan contamination; assess potential for risk to human health and environment; determine appropriate clean-up actions; determine when remedial actions are complete; determine absence of dioxin/furan contaminants.  <b>LIMITATIONS:</b> Use only for specified matrices, analytes, and concentrations.  <b>AVE. COST:</b> \$635 per sample  <b>CAPACITY:</b> 50 samples per month

<sup>1</sup> The required quantitation level is a range of quantitation levels for analytes in a service. See the fact sheet for analyte and technique-specific information.

Type of Analysis (Statement of Work No., Fact Sheet Number or Date)	Data Turnaround Time(s)	Lower Limit of Required Quantitation	Uses/Limitations/Costs/Capacity
Rapid Turnaround Dioxin in Solids, Asphalt, Water, Air and Wipe (SOW Rev. 11/92)	16 hours (electronic)  40 hours (electronic, air)  7 days (hardcopy)	<b>SOLIDS:</b> 0.3 µg/Kg  <b>ASPHALT:</b> 0.7 µg/Kg  <b>WIPE, WATER, AIR:</b> 1.0 ng/sample	<b>USES:</b> To address dioxin situations requiring a quick answer or on-site feedback; identify critical samples for confirmatory analyses; optimize analysis conditions for confirmatory analyses.  <b>LIMITATIONS:</b> Use only for samples likely to contain low level dioxin and when data are needed quickly  <b>AVE COST:</b> \$166 per sample  <b>CAPACITY:</b> 3,600 samples per month
Quick Turnaround Organics in Water, Soil/Solid, Wipe (QTM SOW Rev. 2/93, Draft Fact Sheet 7/93) (available in SAS)	48 hours* (electronic)  7 days (hardcopy)  * validated data	<b>WATER:</b> <b>PAHs:</b> 20 µg/L <b>Phenols:</b> 50 µg/L <b>Aroclors:</b> 1-2 µg/L (toxaphene 5µg/L) <b>Pesticides:</b> 0.1 µg/L <b>Volatiles:</b> 20 µg/L  <b>SOIL/SOLID:</b> <b>PAHs:</b> 330 µg/Kg <b>Phenols:</b> 830 µg/Kg <b>Aroclors:</b> 17-33 µg/Kg (toxaphene 83 µg/Kg) <b>Pesticides:</b> 1.7 µg/Kg <b>Volatiles:</b> 40 µg/Kg	<b>USES:</b> To address organic situations requiring a quick answer or on-site feedback; to direct sampling efforts, monitoring well placement; selection of screen intervals; to monitor cleanups and treatments for effectiveness.  <b>LIMITATION:</b> Service is most effective when contaminants of concern are known or suspected and can be focused on analyte(s) or fraction(s) of concern. Use with the full organics service.  <b>AVE COST:</b> \$250 per fractional analysis  <b>CAPACITY:</b> 90 fractional analyses per day 2,160 fractional analyses per month
Inorganics, Total Metals, Dissolved Metals, Cyanide in Water and Soil (ILM03.0.9240.0-09F5)	35 days  14 days	<b>WATER:</b> <b>Total metals, Dissolved metals:</b> 3-60 µg/L (Hg 0.2 µg/L) (At 200 µg/L): (Ca, K, Mg, Na 5,000 µg/L) <b>Cyanide:</b> 10 µg/L  <b>SOIL:</b> <b>Total metals:</b> 600-10 <sup>6</sup> µg/Kg (Hg 100 µg/Kg) <b>Cyanide:</b> 1,000 µg/Kg	<b>USES:</b> To determine extent of inorganic contamination; assess potential for risk in human health and environment; determine appropriate clean-up action; determine when remedial actions are complete; determine absence of inorganic contaminants.  <b>LIMITATIONS:</b> Main survey method to determine general inorganics concentration. Use for other than low concentration ground and drinking water samples. For suspected high hazard samples, use high concentration inorganic method.  <b>AVE COST:</b> \$109 per sample (35-day) \$165 per sample (14-day)  <b>CAPACITY:</b> 4,600 samples per month (35-day) 900 samples per month (14-day)
Toxicity Characteristic Leaching Procedure (TCLP SOW Rev. 6/93) (available in SAS)	35 days	<b>ORGANICS</b> <b>Volatiles, Semivolatiles:</b> 50 µg/L (pentachlorophenol and 2,4,5- trichlorophenol 125 µg/L) <b>Pesticides:</b> 1.0 µg/L (p-BHC 0.5 µg/L, toxaphene 50 µg/L)  <b>METALS</b> 100-200 µg/L (Pd, Hg 40-60 µg/L, Ba 4,000 µg/L)	<b>USES:</b> Determination of toxicity characteristic for disposal of waste.  <b>LIMITATION:</b> Quantitation limits are highly matrix dependent.  <b>AVE COST:</b> Organics: \$675 per sample (incl. fractions) Inorganics: \$135 per sample  <b>CAPACITY:</b> Organics: 50 samples per month Inorganics: 50 samples per month

Type of Analysis (Statement of Work No., Fact Sheet Number or Date)	Data Turnaround Time(s)	Lower Limit of Required Quantitation	Uses/Limitations/Costs/Capacity
<p>Multi-Concentration Water Quality Parameters (SQW Rev. 7/93, Draft Fact Sheet 8/93) (available in SAS)</p>	14 days	<p><b>PARAMETER</b>  <b>ALK, CL, SO4</b> 2,000 µg/L  <b>TDC, AR, TP</b> 100 µg/L  <b>NH3</b> 1,000 µg/L; <b>CO3</b> 3,000 µg/L  <b>TSS</b> 4,000 µg/L; <b>TDS</b> 10,000 µg/L</p>	<p><b>USES:</b> To determine water quality; determine appropriate clean-up actions; determine when remedial actions are complete; determine presence or absence of water quality parameters.</p> <p><b>LIMITATIONS:</b> Use when water samples contain low or medium levels of up to 10 water quality parameters. Quantitation limits are highly matrix-dependent.</p> <p><b>AVERAGE COST:</b> \$215 per sample (all parameters)</p> <p><b>CAPACITY:</b> 250 samples per month</p>
<p>High Concentration Total Metals and Cyanide in Liquid, Solid, and Multiphase Samples (HCO 1.2, 9240.0-18FS)</p>	35 days	<p><b>LIQUID, SOLID, AND MULTIPHASE:</b>  <b>Total metals:</b> 5,000-80,000 µg/Kg (for Hg 300 µg/Kg)  <b>Cyanide:</b> 1,500 µg/Kg</p>	<p><b>USES:</b> To determine extent of high level contamination; determine drum contamination; assess potential for risk to human health and environment; determine appropriate clean-up actions; determine presence or absence of high levels of inorganic contaminants.</p> <p><b>LIMITATION:</b> Use for determination of other than low or medium concentration inorganic contaminants.</p> <p><b>AVERAGE COST:</b> \$95 per sample</p> <p><b>CAPACITY:</b> 100 samples per month</p>
<p>High Concentration Organics in Water - Immiscible Liquids and Solids (SQW Rev. 9/88 and 4/89) (available in SAS)</p>	35 days	<p><b>LIQUIDS and SOLIDS:</b>  <b>Volatiles:</b> 2.5-6.0 mg/Kg  <b>Extractables:</b> 20-200 mg/Kg  <b>Aroclors:</b> 10 mg/Kg  <b>Toxaphene:</b> 50 mg/Kg</p>	<p><b>USES:</b> To determine extent of high level contamination; determine drum contamination; assess potential for risk to human health and environment; determine appropriate clean-up actions; determine presence or absence of high levels of organic contaminants.</p> <p><b>LIMITATIONS:</b> Use for determination of other than low or medium concentration organic contaminants.</p> <p><b>AVERAGE COST:</b> \$650 (all fractions)</p> <p><b>CAPACITY:</b> Project-specific requests</p>
<p>Low Concentration Total Metals, Cyanide, Total Nitrogen, Fluoride in Water (7/92 Draft, 9240.0-11FS) (available in SAS)</p>	14 days	<p><b>WATER:</b>  <b>Total metals:</b> 1-10 µg/L (Hg 0.2 µg/L)  (Ar, Ni, Zn 20µg/L; Pb 100 µg/L)  (Ca, Mg, Na 500 µg/L, K 150 µg/L)  <b>Cyanide:</b> 10 µg/L  <b>Total Nitrogen:</b> 100 µg/L  <b>Fluoride:</b> 200 µg/L</p>	<p><b>USES:</b> To determine extent of well/ground water contamination; assess potential for risk in human health; determine appropriate clean-up actions; determine when remedial actions are complete; determine absence or inorganic contaminants.</p> <p><b>LIMITATIONS:</b> Use only for drinking/ground water; type samples when concentrations for unfiltered samples are not expected to exceed the upper limit of the calibration curves: 200 µg/L for Hg, 200-400 µg/L for cyanide, 1 mg/L for total nitrogen, 1000 mg/L for fluoride, and for the following analytes using flame AA - 7 mg/L for Ca, 0.5 mg/L for Mg, 2 mg/L for K, and 1 mg/L for Na. For analytes not described above, no upper calibration limits specified.</p> <p><b>AVERAGE COST:</b> \$215 per sample</p> <p><b>CAPACITY:</b> Project-specific requests</p>

Type of Analyte (Statement of Work No., Fact Sheet Number or Date)	Data Turnaround Time(s)	Lower Limit of Required Quantitation	Uses/Limitations/Costs/Capacity
<p>Analysis of Ambient Air (SOV Rev. VGAA01.0, VTAA01.0, SVAA01.0 and MAAD1.0, 9240.0-15FS) (available in SAS)</p>	<p>35 days</p>	<p><u>ORGANICS:</u>  <i>Volatiles:</i> canister 2-5 ppbv; Tenax 2-48 ng on column  <i>Semivolatiles, Particulates:</i> 3.1-183 ng/m<sup>3</sup></p> <p><u>INORGANICS:</u>  <i>Total metals:</i> 1-109 ng/m<sup>3</sup></p>	<p><u>USES:</u> To determine extent of contamination; assess potential for risk in human health and environment; determine appropriate clean-up action; determine when remedial actions are complete; determine presence or absence of air contamination.</p> <p><u>LIMITATIONS:</u> (Volatiles) For canister, insufficient flow rates and sampling times may prevent collection of sufficient quantity of sample; for Tenax, certain analytes are not captured.</p> <p><u>AVE COST:</u> \$700 per sample (organics)  \$375 per sample (metals)</p> <p><u>CAPACITY:</u> Project-specific requests</p>
<p>General Radiochemical Analytical Services Protocol for Water and Soil (GRASP SOW Rev. 6/1/92) (available in SAS)</p>	<p>45 days</p>	<p><u>WATER</u>  <i>Gross Alpha:</i> 3 pCi/L  <i>Gross Beta:</i> 2 pCi/L  <i>Metals:</i> 0.05 pCi/L (for Ra, Sr-90)  1 pCi/L: Cs-137 10 pCi/L; T 1,000 pCi/L)</p> <p><u>SOIL/SEDIMENT</u>  <i>Metals:</i> 0.05 pCi/g (for Ra, Sr-90)  0.1 pCi/g)</p>	<p><u>USES:</u> To determine presence or absence of radioactivity; assess potential for risk in human health and environment; determine appropriate clean-up action; determine when remedial actions are complete</p> <p><u>LIMITATION:</u> Main survey method to determine general radioactivity</p> <p><u>AVE COST:</u> \$1,300 per sample (all analytes)</p> <p><u>CAPACITY:</u> Project-specific requests</p>



Analytical Services Available Through Superfund's Analytical Operations Branch/Contract Laboratory Program (CLP)

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Analytical Services for Superfund

October 1993

Type of Analysis (Statement of Work No., Fact Sheet Number, or Date)	Date Received/Turnaround Time(s)	Lower Limit of Required Quantitation*	Uses/Limitations/Costs/Capacity
<p>Organics, Volatiles, Semivolatiles, Pesticides in Water and Soil (LMO-8, 9240.0-08FS)</p> <p>Available in RAS</p>	<p>35 days 14 days</p>	<p><b>WATER:</b>  <b>Volatiles:</b> 10 µg/L  <b>Semivolatiles:</b> 10-25 µg/L  <b>Pesticides:</b> 0.05-0.10 µg/L, except methoxychlor 0.5 µg/L; Aroclors 1-2 µg/L, toxaphene 5 µg/L</p> <p><b>SOILS:</b>  <b>Volatiles:</b> Low conc. 10 µg/Kg; medium conc. 1,200 µg/Kg  <b>Semivolatiles:</b> Low conc. 330-800 µg/Kg; medium conc. 10,000-25,000 µg/Kg  <b>Pesticides:</b> 1.7-3.3 µg/Kg, except methoxychlor 17 µg/Kg; Aroclors 33-67 µg/Kg, toxaphene 170 µg/Kg</p>	<p><b>USES:</b> To determine extent of organic contamination; assess potential for risk to human health and environment; determine appropriate clean-up action; determine when remedial actions are complete; determine absence of organic contaminants.</p> <p><b>LIMITATIONS:</b> Main survey method to determine general organic concentration. Use for other than low concentration ground and drinking water samples. For suspected high hazard samples, use high concentration organic method.</p> <p><b>AVE COST:</b> \$ 790 per sample (35-day; all fractions) \$1,355 per sample (14-day; all fractions)</p> <p><b>CAPACITY:</b> 4,300 samples per month (35-day) 700 samples per month (14-day)</p>
<p>Low concentration Volatiles, Semivolatiles, Pesticides in Water (SOW Rev. 10/92, 9240.0-07FS)</p> <p>Available as HQ Multi-quant SAS</p>	<p>14 days</p>	<p><b>WATER:</b>  <b>Volatiles:</b> 1 µg/L (ketones 5 µg/L)  <b>Semivolatiles:</b> 5-20 µg/L  <b>Pesticides:</b> 0.01-0.02 µg/L, except methoxychlor 0.1 µg/L; Aroclors 0.2-0.4 µg/L, toxaphene 1.0 µg/L</p>	<p><b>USES:</b> To determine extent of well/ground water contamination; assess potential for risk to human health; determine appropriate clean-up actions; determine when remedial actions are completed; determine absence of organic contaminants.</p> <p><b>LIMITATIONS:</b> Use only for drinking/ground water type samples when concentrations for undiluted samples are not expected to exceed the upper limit of the calibration curves as follows: 25 µg/L for volatiles, 80 µg/L for semivolatiles, and 0.32 µg/L for pesticides except for Aroclors 5.4 µg/L and toxaphene 16 µg/L.</p> <p><b>AVE COST:</b> \$875 per sample (all fractions) \$135 per sample (VOA only)</p> <p><b>CAPACITY:</b> 50 samples per month (all fractions) 100 samples per month (VOA only)</p>
<p>Dioxin/Furans in Water, Fly Ash, Soil, and Waste (LMO1.1, 09240.0-07FS)</p> <p>Available in RAS</p>	<p>45 days</p>	<p><b>WATER:</b> 0.01-0.05 µg/L</p> <p><b>FLY ASH:</b> 1-5 µg/Kg</p> <p><b>SOIL:</b> 1-5 µg/Kg</p> <p><b>WASTE:</b> 10-50 µg/Kg</p>	<p><b>USES:</b> To determine extent of dioxin/furan contamination; assess potential for risk to human health and environment; determine appropriate clean-up actions; determine when remedial actions are complete; determine absence of dioxin/furan contaminants.</p> <p><b>LIMITATIONS:</b> Use only for specified matrices, analytes, and concentrations.</p> <p><b>AVE COST:</b> \$635 per sample</p> <p><b>CAPACITY:</b> 50 samples per month</p>

\* The required quantitation level is a range of quantitation levels for analytes in a service. See the fact sheet for analysis and technique-specific information.

Type of Analysis (Statement of Work No., Fact Sheet Number or Date)	Data Turnaround Time(s)	Lower Limit of Required Quantitation	Uses/Limitations/Costs/Capacity
<p>Rapid Turnaround Dioxins in Solids, Asphalt, Water, Air and Wipe (SOW Rev. 11/92)</p> <p>Available in RAS</p>	<p>16 hours (electronic)</p> <p>40 hours (electronic, air)</p> <p>7 days (hardcopy)</p>	<p><u>SOLIDS:</u> 0.3 µg/Kg</p> <p><u>ASPHALT:</u> 0.7 µg/Kg</p> <p><u>WIPE, WATER, AIR:</u> 1.0 ng/sample</p>	<p><u>USES:</u> To address dioxin situations requiring a quick answer or on-site feedback; identify critical samples for confirmatory analyses; optimize analysis conditions for confirmatory analyses.</p> <p><u>LIMITATIONS:</u> Use only for samples likely to contain low level dioxin and when data are needed quickly.</p> <p><u>AVE COST:</u> \$168 per sample</p> <p><u>CAPACITY:</u> 3,600 samples per month</p>
<p>Quick Turnaround Organics in Water, Soil/Solid, Wipe (QTM SOW Rev. 2/93, Draft Fact Sheet 7/93)</p> <p>Available as HQ Multi- Client SAS</p>	<p>48 hours* (electronic)</p> <p>7 days (hardcopy)</p> <p>* validated data</p>	<p><u>WATER:</u> <i>PAHs:</i> 20 µg/L <i>Phenols:</i> 50 µg/L <i>Aroclors:</i> 1-2 µg/L (toxaphene 5µg/L) <i>Pesticides:</i> 0.1 µg/L <i>Volatiles:</i> 20 µg/L</p> <p><u>SOIL/SOLID:</u> <i>PAHs:</i> 300 µg/Kg <i>Phenols:</i> 800 µg/Kg <i>Aroclors:</i> 17-33 µg/Kg (toxaphene 83 µg/Kg) <i>Pesticides:</i> 1.7 µg/Kg <i>Volatiles:</i> 40 µg/Kg</p>	<p><u>USES:</u> To address organics situations requiring a quick answer or on-site feedback; direct sampling efforts; locate sampling areas; monitor the placement of wells; select screen intervals; monitor cleanups and treatment for effectiveness. Can be used to monitor PRP activity and provide feedback at public meetings.</p> <p><u>LIMITATIONS:</u> Service is most effective when contaminant areas of concern are known or suspected and can be focused on analyte(s) or fraction(s) of concern. Use with the full organics service.</p> <p><u>AVE COST:</u> \$250 per fractional analysis</p> <p><u>CAPACITY:</u> 90 fractional analyses per day 2,160 fractional analyses per month</p>
<p>Inorganics, Total Metals, Dissolved Metals, Cyanide in Water and Soil (ILM03.0.9240.0-0-FSI)</p> <p>Available in RAS</p>	<p>35 days</p> <p>14 days</p>	<p><u>WATER:</u> <i>Total metals, Dissolved metals:</i> 3-60 µg/L (Hg 0.2 µg/L) [Al] 200 µg/L; [Ca, K, Mg, Na] 5,000 µg/L <i>Cyanide:</i> 10 µg/L</p> <p><u>SOIL:</u> <i>Total metals:</i> 600-10<sup>4</sup> µg/Kg (Hg 100 µg/Kg) <i>Cyanide:</i> 1,000 µg/Kg</p>	<p><u>USES:</u> To determine extent of inorganics contamination/ assess potential for risk in human health and environment; determine appropriate clean-up action; determine when remedial actions are complete; determine absence of inorganic contaminants.</p> <p><u>LIMITATIONS:</u> Main survey method to determine general inorganics concentration. Use for other than low concentration ground and drinking water samples. For suspected high hazard samples, use high concentration inorganic method.</p> <p><u>AVE COST:</u> \$109 per sample (35-day) \$165 per sample (14-day)</p> <p><u>CAPACITY:</u> 4,600 samples per month (35-day) 900 samples per month (14-day)</p>
<p>Toxicity Characteristic Leaching Procedure (TCLP SOW Rev. 6/93)</p> <p>Available as HQ Multi- Client SAS</p>	<p>35 days</p>	<p><u>ORGANICS</u> <i>Volatiles, Semivolatiles:</i> 50 µg/L [pentachlorophenol and 2,4,5- trichloropheno] 125 µg/L <i>Pesticides:</i> 1.0 µg/L [p-BHC 0.5 µg/L, toxaphene 50 µg/L]</p> <p><u>METALS</u> 100-200 µg/L [Pb, Hg 40-60 µg/L, Ba 4,000 µg/L]</p>	<p><u>USES:</u> Determination of toxicity characteristic for disp of waste</p> <p><u>LIMITATION:</u> Quantitation limits are highly matrix dependent.</p> <p><u>AVE COST:</u> Organics: \$675 per sample (oil fraction) Inorganics: \$135 per sample</p> <p><u>CAPACITY:</u> Organics: 50 samples per month Inorganics: 50 samples per month</p>

Type of Analysis (Statement of Work No., Fact Sheet Number or Date)	Date Turnaround (Time)	Lower Limit of Required Quantitation	Use Limitations/Costs/Capacity
<p>Low Concentration Water Quality Parameters (QW Rev. 7/93, Draft Fact Sheet 8/93)</p> <p>Available as HQ Multi-Client SAS</p>	14 days	<p><b>PARAMETER</b>  <b>ALK, Cl, SO4</b> 2,000 µg/L  <b>TOC, NH<sub>4</sub>, TP</b> 100 µg/L  <b>NH<sub>3</sub></b> 1,000 µg/L; <b>COD</b> 3,000 µg/L  <b>TSS</b> 4,000 µg/L; <b>TDS</b> 10,000 µg/L</p>	<p><b>USES:</b> To determine water quality; determine appropriate clean-up actions; determine when remedial actions are complete; determine presence or absence of water quality parameters.</p> <p><b>LIMITATIONS:</b> Use when water samples contain low or medium levels of up to 10 water quality parameters. Quantitation limits are highly matrix-dependent.</p> <p><b>AVE COST:</b> \$215 per sample (all parameters)</p> <p><b>CAPACITY:</b> 250 samples per month</p>
<p>High Concentration Total Metals and Cyanide in Liquid, Solid, and Multiphase Samples (HC01.2, 8240.0-16FS)</p> <p>Available in SAS</p>	35 days	<p><b>LIQUID, SOLID, AND MULTIPHASE:</b>  <b>Total metals:</b> 5,000-80,000 µg/Kg (for Hg 300 µg/Kg)  <b>Cyanide:</b> 1,500 µg/Kg</p>	<p><b>USES:</b> To determine extent of high level contamination; determine drum contamination; assess potential for risk to human health and environment; determine appropriate clean-up actions; determine presence or absence of high levels of inorganic contaminants.</p> <p><b>LIMITATION:</b> Use for determination of other than low or medium concentration inorganic contaminants.</p> <p><b>AVE COST:</b> \$95 per sample</p> <p><b>CAPACITY:</b> 100 samples per month</p>
<p>High Concentration Organics in Water - Immiscible Liquids and Solids (SOW Rev. 9/88 and 4/89)</p> <p>Available in SAS</p>	35 days	<p><b>LIQUIDS and SOLIDS:</b>  <b>Volatiles:</b> 2.5-5.0 mg/Kg  <b>Extractables:</b> 20-200 mg/Kg  <b>Aroclors:</b> 10 mg/Kg  <b>Polynaromatics:</b> 50 mg/Kg</p>	<p><b>USES:</b> To determine extent of high level contamination; determine drum contamination; assess potential for risk to human health and environment; determine appropriate clean-up actions; determine presence or absence of high levels of organic contaminants.</p> <p><b>LIMITATIONS:</b> Use for determination of other than low or medium concentration organic contaminants.</p> <p><b>AVE COST:</b> \$650 (all fractions)</p> <p><b>CAPACITY:</b> Project specific requests</p>
<p>Low Concentration Total Metals, Cyanide, Total Nitrogen, Fluoride in Water (7/92 Draft, 240 0-11FS)</p> <p>Available as HQ Multi-Client SAS</p>	14 days	<p><b>WATER:</b>  <b>Total metals:</b> 1-10 µg/L (Hg 0.2 µg/L) (As, Ni, Zn 20µg/L; Fe 100 µg/L) (Ca, Mg, Na 500 µg/L; K 750 µg/L)  <b>Cyanide:</b> 10 µg/L  <b>Total Nitrogen:</b> 100 µg/L  <b>Fluoride:</b> 200 µg/L</p>	<p><b>USES:</b> To determine extent of well-ground water contamination; assess potential for risk in human health; determine appropriate clean-up actions; determine when remedial actions are complete; determine absence of inorganic contaminants.</p> <p><b>LIMITATIONS:</b> Use only for drinking/ground water type samples when concentrations for unfiltered samples are not expected to exceed the upper limit of the calibration curves: 200 µg/L for Hg, 200-400 µg/L for cyanide, 1 mg/L for total nitrogen, 1000 mg/L for fluoride, and for the following analyses using flame AA: 7 mg/L for Ca, 0.5 mg/L for Mg, 2 mg/L for K, and 1 mg/L for Na. For analyses not described above, no upper calibration limit is specified.</p> <p><b>AVE COST:</b> \$215 per sample</p> <p><b>CAPACITY:</b> Project specific requests</p>

Type of Analysis (Statement of Work No., Fact Sheet Number or Date)	Date Turnaround (Month)	Lower Limit of Required Quantities	Uses/Limitations/Costs/Capacity
<p>Analysis of Ambient Air SOW Rev. YCAA01.0, YAA01.0, SVA01.0 and MAA01.0, 9240, 9- 15FS1</p> <p>Available in SAS</p>	<p>36 days</p>	<p><b>ORGANICS:</b> <i>Volatiles:</i> cancer 2-6 ppbv; Texas 2-46 ng on column <i>Semi-volatiles, Pesticides:</i> 37-183 ng/m<sup>3</sup></p> <p><b>INORGANICS:</b> <i>Total metals:</i> 1-109 ng/m<sup>3</sup></p>	<p><b>USES:</b> To determine extent of contamination; assess potential for risk in human health and environment; determine appropriate clean-up action; determine when remedial actions are complete; determine presence or absence of air contamination.</p> <p><b>LIMITATIONS:</b> (Volatiles) For cancer, insufficient flow rates and sampling times may prevent collection of sufficient quantity of sample; for Texas, certain analytes are not captured.</p> <p><b>AVE COST:</b> \$700 per sample (organics) \$375 per sample (metals)</p> <p><b>CAPACITY:</b> Project-specific requests</p>
<p>General Radiochemical Analytical Services - Protocol in Water and Soil GRASP SOW Rev. 5/1/921</p> <p>Available in SAS</p>	<p>45 days</p>	<p><b>WATER</b> <i>Gross Alpha:</i> 3 pCi/L <i>Gross Beta:</i> 2 pCi/L <i>Metals:</i> 0.05 pCi/L (for Re. 54-90 1 pCi/L, Cs-137 10 pCi/L; T 1.000 pCi/L)</p> <p><b>SOIL/SEDIMENT</b> <i>Metals:</i> 0.05 pCi/g (for Re. 92-90 0.1 pCi/g)</p>	<p><b>USES:</b> To determine presence or absence of radioactivity; assess potential for risk in human health and environment; determine appropriate clean-up action; determine when remedial actions are complete</p> <p><b>LIMITATION:</b> Main survey method to determine general radioactivity</p> <p><b>AVE COST:</b> \$1,000 per sample (all analytes)</p> <p><b>CAPACITY:</b> Project-specific requests</p>